University of Alberta

Reading Literary Hypertext

by

Teresa Mary Dobson

A thesis submitted to the faculty of graduate studies and research in partial fulfillment of the requirements for the degree of Doctor of Philosophy

Departments of Secondary Education and English

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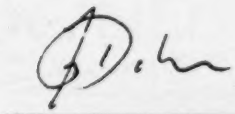

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This thesis is dedicated to the memory of my grandmother,

Violet May Overton

11 September 1910 – 10 April 1997

Our beginning was when we were made,

But the love in which he made us never had beginning.

Julian of Norwich

Abstract

Hypertext has been upheld as a medium that will bring fundamental and liberating change to literary reading and to literary education. Yet in spite of extensive discussion among theorists about the ways in which the medium may be changing author and reader roles, there exist few empirical examinations of how literary reading processes may be modified in the hypertext environment. This dissertation presents a review of theoretical and empirical research on hypertext and reports the results of two studies with 100 readers of stories that were presented on computer in either linear or simulated networked hypertext form. Reading times, link choices, and self-recorded verbal commentary were collected from all participants; quantitative and qualitative methodologies were employed in data analysis. Several significant differences between the two groups of readers were observed that suggest the hypertext presentation tended to promote a story-driven form of reading and to discourage personal involvement with the narrative. The empirical component of this study is framed by a discussion of the pedagogical implications for hypertext in present-day secondary English classrooms.

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Part I

Opening Scenes

Preamble

In what has been heralded as the late age of print—the end of the Gutenberg galaxy—the English teacher, perhaps with a small stash of paperbacks tucked under her arm, is perplexed. On the one hand she is bombarded by the prophetic mutterings of new-age humanities and curriculum scholars: the computer, they say, is *the thing*. On the other hand, she does not like what she sees: the students do not seem to be reading; rather, they are poised on straight-backed chairs, curled in corners with portable devices—and they are glued to the screens. They are viewing, browsing, skimming, scanning, searching and zooming, but they are not *reading*. Or at least, they are not reading in the way she remembers, not with that same obsession which in her youth drove her time and again to the bookshelf to gather another volume to satiate her appetite for words. Instead, what she observes of her students in the modern library is altogether another experience: it is a jittery sort of activity, an endless playing with text and image that runs counter to her own understanding of the spirit of reading, particularly of literary reading. Her students seem no longer possessed of that dreamy desire to become "lost" in story (cf. Nell, 1988), a desire that Sven Birkerts (1994) recalls with clarity:

> The reading I did in late boyhood and early adolescence was passionate and private, carried on at high heat. When I went to my room and opened a book, it was to seal myself off as fully as possible in another place. I was not reading, as now, with only one part of the self. I was there body and soul, living vicariously. When Finney died at the end of John Knowles's *Separate Peace* I cried scalding tears, unable to believe that the whole world did not grind to a sorrowful halt. . .
>
> I remember so clearly the shock I would feel whenever I looked up from the vortex of the page and faced the strangely immobile world around me. My room, the trees outside the

> window—everything seemed so dense, so saturated with itself. Never since have I known it so intensely, this colliding of realities, the current of mystery leaping the gap between them. In affording this dissociation, reading was like a drug. I knew even then, in my early teen years, that what I did in my privacy was in some way a betrayal of the dominant order of things, an excitement slightly suspect at its core. (p. 37)

In Birkerts's recounting, the English teacher might recognise her own experience, but when, shot through with regret over the apparent demise of such moments, she protests that something is being lost in the unbridled coming of the computer age, her words are met with ridicule by her colleagues. She is accused of Luddism, elitism and maudlin nostalgia, and perhaps rightly so. The computer, she is advised, does not hinder the act of reading, it facilitates it. It allows for easy storage of, and speedy access to, text. Best of all, it is motivational: even the most reluctant young readers do not balk, she is advised, at the prospect of spending an afternoon browsing a CD-ROM.

So the new genre, *hypertext*, has arrived in the humanities classroom: to acclaim and reservation, excitement and disbelief. And the English teacher, caught in a storm of recommendations, stands at the watershed. Perhaps she would rather shore up the pages of her past against the onslaught, but that would be a narrow-minded, perhaps even fearful, response. She must instead seek some understanding of how readers experience the multi-sequential space of electronic text, and of what the pedagogical significance of this experience might be; for, profitably or not, the students are browsing.

Introduction

On reading

I have titled this dissertation, with seeming plainness, *Reading literary hypertext*; yet, what is clear to anyone who makes his or her business studying reading, or literature, or hypertext, is that none of these terms is uncontentious. *Reading*, the action of perusing written or printed matter (*OED*), has regularly been a subject of debate at one level or another. It has been viewed variously since the advent of written language as vice and virtue, and has always been an activity shrouded in mystery. In late medieval Europe, for example, the Church discouraged reading of the scriptures by laity. As Manguel (1996) observes, a layperson with a bible was a dangerous individual, for he could inspect the words "at leisure, drawing new notions from them, allowing comparisons from memory or from other books open for simultaneous perusal" (p. 51). Were he to read *silently*, worse still, the possibility for clarification, guidance, condemnation, or censorship by a listener was prevented. All this threatened the chief aim of the Catholic Church in this period: the establishment of a common dogma (Manguel, 1996, p. 51). By the time of the Puritans, however, views about scripture reading were already changing. Graff (1987) explains:

> Puritan strongholds were among the most education-conscious and literate centers in England. In their intense piety and concern about individual access to the Word, Puritans expected their adherents to learn to read. Household and schoolhouse, as well as pulpit and chapel, were centers of schooling. Puritans were for their day a reading people, even if their tastes were often narrow. (pp. 162-163)

In the secular domain, anxieties about reading through the centuries might more commonly be attributed to concerns about the moral worth of fictive writing. Plato (trans., 2000), for example, cautions against indulgence in "imitative poetry" and supports laws limiting general access to it:

> Imitative poetry is the last thing we should allow . . . Between ourselves . . . everything of that sort seems to me to be a destructive influence on the minds of those who hear it. Unless of course they have the antidote, the knowledge of what it really is. (p. 313)

While a series of critics have countered arguments such as this (most notably Shelley [1840/1986], who contests that Plato's point of view "rests upon a misconception of the manner in which poetry acts to produce the moral improvement" of humanity [p. 785]), fears about mass literacy have nevertheless prevailed to a greater or lesser degree for centuries. In the 1800s many people objected to the reading of novels as "an abuse of literacy likely to do moral damage to readers and, indeed, to the national culture" (Brantlinger, 1998, p. 3). Even Coleridge (1856/1968), who spoke publicly about the merits of poetry reading, was nonetheless ardent in his opinion on the question of fiction, suggesting that the habitual reading of novels "occasions in time the entire destruction of the powers of the mind" (p. 3). He justified his conviction as follows: "it conveys no trustworthy information as to facts; it produces no improvement of the intellect, but fills the mind with a maukish and morbid sensibility, which is directly hostile to the cultivation, invigoration, and enlargement of the nobler faculties of the understanding" (p. 3). With characteristic wry humour, Austen (1818/1968) deems novelists an unduly "injured body," and scoffs at the established hierarchy of literary worth:

> From pride, ignorance, or fashion, our foes are almost as many as our readers; and while the abilities of the nine-hundredth abridger of the "History of England," or of the man who collects and publishes in a volume some dozen lines of Milton, Pope, and Prior, with a paper from the "Spectator," and a chapter from Sterne, are eulogised by a thousand pens, there seems almost a general wish of decrying the capacity and undervaluing the labour of the novelist, and of slighting the performances which have only genius, wit, and taste to recommend them. (p. 36)

In spite of her promotional writings, Austen did not live to see the broad acceptance of her art; the perception of fiction-reading as vice, Brantlinger observes, was common until the beginning of the twentieth century in debates about education and the merits of establishing public libraries, places many feared would become hotbeds of depravity filled with fiction and other equally undesirable forms of literature.

This perception has changed dramatically in the last 100 years. Now that newer media (television, computers, and so on) have been branded as the tools that facilitate the "destruction of the powers of the mind" (cf. Postman, 1992), reading print material of almost any kind—especially the novels deemed so harmful two centuries ago—is encouraged as a way to improved literacy. Notable English language arts educators such as Atwell (1987) advocate a high-tolerance policy regarding what constitutes appropriate reading during scheduled in-class reading periods for middle school students. Her rule:

> [Students] must read a book (no magazines or newspapers where text competes with pictures), preferably one that tells a story (e.g., novels, histories and biographies rather than books of lists or facts where readers can't sustain attention, build up speed and fluency, or grow to love good stories). (p. 159)

Thus narrative, the former black sheep of the literary world, is established as the genre of preference, while informational texts such as newspapers and books of facts are judged the sort of reading material that prevents intellectual growth by curtailing the imagination. Of course, contemporary views are just as arbitrary in some respects as those of nineteenth-century critics are in others. Apparently in classrooms run according to Atwell's rules, a facsimile of Blake's illuminated manuscripts might be contested on the grounds that the illustrations (winding, as they do, so insidiously between the verses) "compete" with the text, while a Harlequin novel admirably fulfils all criteria. The common wisdom about what constitutes good, or valuable, reading is clearly still in flux, and likely always will be.

Beyond the widely differing opinions on its moral worth, the enigmatic nature of the reading process has also been a matter of ongoing speculation. On a fundamental level, reading involves translating symbols (letters) into words and sentences in an effort to derive meaning. But where does such meaning lie, in the text or in the reader?

According to the school of New Criticism, which was at its peak in the middle part of the twentieth century, meaning resides primarily in the text. As Eagleton (1983) explains, New Critics assumed meaning was "public and objective, inscribed in the very language of the literary text, not a question of some putative ghostly impulse in a long-dead author's head, or the arbitrary private significances a reader might attach to his words" (p. 48). Conversely, reception theorists, whose writings have precipitated a marked shift of attention to the reader in recent years, would contest that meaning can only be derived when mind animates text, and therefore meaning lies in both places. According to Rosenblatt (1938/1968), "A novel or poem or play remains merely inkspots on paper until a reader transforms them into a set of meaningful symbols . . . The reader infuses intellectual and emotional meanings into the pattern of verbal symbols, and those symbols channel his thoughts and feelings" (p. 25). When we consider Rosenblatt's description, however, the enigmatic nature of the reading process becomes doubly apparent, for her explication engenders more questions than it answers: What are the cognitive processes involved in translating "inkspots" into meaningful symbols? Which elements of written language, specifically, prompt intellectual and emotional response? In what ways might a text "channel" thoughts and feelings? Is the range of experience possible in a particular text limited in any way? These, among others, are issues that are central to the study of reading, and that, in some respects, are as mysterious today as they were when scholars like I.A. Richards were pioneering reader-response criticism in the 1920s.

On literariness

Thus far I have spoken of the term *reading* in its most common verb form. The word also denotes, however, the act of studying or commenting on a subject, which brings me back to the title of this study, *Reading literary hypertext*. Just as reading is a complex activity that has been treated variously over the centuries, so is the nature of the subject that I am "reading," literary hypertext, contentious. First, what is meant by the term *literary*? Eagleton (1983) observes that in eighteenth-century England, the concept of literature "meant the whole body of valued writing in society: philosophy, history, essays and letters as well as poems" (p. 17). Broadly, then, what qualified as literary was

the sort of writing that reflected the values of a particular social class. The modern sense of the word *literature*, Eagleton continues, only "gets under way in the nineteenth century" with the "narrowing of the category of literature to so-called 'creative' or 'imaginative' work" (p. 18). This classification, however, was again modified in the early part of the twentieth century by the Russian formalists (critics like Viktor Shklovsky and Roman Jakobson), who proposed that literature is that body of writing in which ordinary language is transformed and intensified—elevated, if you will—through the use of literary devices such as imagery, rhythm, rhyme and so on. Such devices, according to formalists, have in common their "estranging" or "defamiliarizing" effect, thus prompting in readers a "dramatic awareness of language" (Eagleton, 1983, p. 4). As Miall and Kuiken (1994a) observe, the origins of "defamiliarization theory" in fact predate the formalist movement of the 1920s, being traceable at least to Coleridge (1817/1983), who suggests that one aim of poetry is to awaken "the mind's attention from the lethargy of custom" (p. 7).

Recent theorists (i.e., Culler, 1976) have eschewed this method of classification, contending, instead, that identifying some constant set of inherently literary features is an impossible undertaking. Shakespeare's plays and Hemingway's novels, for example, are both deemed literary, and yet their stylistic features are widely variant. Literature, Eagleton concludes, is a functional rather than ontological term. In this respect, we might distinguish what is literary from what is not literary on the basis of pragmatic function: literature becomes, in this view, non-pragmatic discourse. But given that different readers will read a particular text for different purposes—some for pragmatic purposes and some for non-pragmatic purposes—even this mode of classification is not without its ambiguity. In this view literariness is in the eye of the beholder, and attempting to make a distinction between literary and non-literary text is a pointless endeavour because the grounds for such distinction can never be objective. Of course, Eagleton is tendentious here; from Aristotle to Sidney, and beyond, critics have defined literariness quite effectively. Shelley (1840/1986), for example, observes that literature (poetry, specifically) "differs from logic" because "it is not subject to the control of the active powers of the mind" (p. 791). In this view, its ability spontaneously to arouse pleasure is a defining feature of literary text. As Shelley puts it, readers "open themselves to receive

the wisdom which is mingled with its delight" (p. 784). Ultimately, despite the position of theorists like Eagleton, research with readers suggests that people do in fact possess powerful intuitions regarding text types, that there is an array of determinants—linguistic, emotive, aesthetic, and so on—that are more common to literary text than to non-literary text, and that the process of reading literary text therefore differs in certain respects from the process of reading other forms of text (cf., Miall and Kuiken, 1999 and van Peer, 1994). For my purpose here, then, I shall take a middle view, supposing that while the term *literary* may be problematic in some respects, it is nevertheless a useful and important one.

On hypertext

Hypertext, or *hypermedia*, is the last term I wish to discuss in this introductory section. The word is generally understood to denote a method of on-line information management in which textual documents (often accompanied by graphics and audio) are segmented into nodes, or "lexias," to use Barthes's (1974) term. The nodes are connected to one another by electronic links that are signified by "clickable," usually highlighted, words or icons. The first usage of the term is generally ascribed to scientist and eclectic thinker, Ted Nelson who, in the 1960s, first realised and promoted the computer's ability to manage and to make readily accessible large volumes of informational text (cf., Bolter, 1991a; Landow, 1997).[1] The concept of hypertext predates Nelson and Engelbart, however, commonly being attributed to Vannevar Bush (1945), whose visionary essay, "As We May Think," describes in theory what now appears to exist in fact. In this essay, Bush details his vision of an information storage machine, the "memex," which might function as a "supplement" to human memory by enabling the user to store, and to retrieve at the tap of a button, vast quantities of information. He proposes that users might link related documents stored within the machine, thereby building—or blazing—

---

[1] Bardini (1997) observes that hypertext also finds its origin in the research of Douglas Engelbart (who is most famous for leading the Stanford research team that developed the mouse):

> At the same time that Ted Nelson coined the term hypertext, Douglas Engelbart was beginning to implement his framework for the augmentation of Human Intellect at Stanford Research Institute . . . . Although his framework itself did not directly mention hypertext, the core of Douglas Engelbart's vision was based [on] a very similar premise . . . . (¶ 8)

"trails" through the data base. Such linking is the most important feature of the device, for it mirrors, according to Bush, the operation of the mind: "With one item in its grasp, it snaps instantly to the next that is suggested by the association of thoughts, in accordance with some intricate web of trails carried by the cells of the brain" (¶ 52). While Bush's understanding of cognition may be called into question by current theorists (e.g., Dillon, 1996), his foresight is uncanny. Exchange the term "computer" for "memex," and his utopia, described here, seems very close to being realised:

> Wholly new forms of encyclopaedias will appear, ready-made with a mesh of associative trails running through them, ready to be dropped into the memex and there amplified. The lawyer has at his touch the associated opinions and decisions of his whole experience, and of the experience of friends and authorities. The patent attorney has on call the millions of issued patents, with familiar trails to every point of his client's interest . . . .
>
> There is a new profession of trail blazers, those who find delight in the task of establishing useful trails through the enormous mass of the common record. (¶ 65-66)

As Bush anticipated, electronic encyclopaedias have flooded the market, and corporations are using hypertext technology to facilitate access to extensive databases.[2] In the realm of North American education, students are exposed with increasing frequency to electronic research tools, and are encouraged to explore topics using the largest hypertext in the world, the Internet.

Debating hypertext

Critical response to hypertext in this incunabular stage of the medium is polemic: while some laud the possibilities the form holds for facilitating and representing thought

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[2] As Nelson (1991) observes, however, the ability to personalise linking that Bush envisages is yet distant. Certainly new forms of networked encyclopaedias exist, but generally their linking structures cannot be reconfigured. The reader of such a text therefore does not have "at his touch associated opinions and decisions of his whole experience," but rather, the associated opinions and decisions of the team of programmers and writers working for the publishing house in question.

(e.g., Landow, 1997), others fear the trivialization of the word. Sven Birkerts (1994), for example, suggests that language is "eroding" as we move irrevocably from print to electronic culture:

> The complexity and distinctiveness of written expression, which are deeply bound to traditions of print literacy, will gradually be replaced by a more telegraphic sort of 'plainspeak.' Syntactic masonry is already a dying art . . . Simple linguistic prefab is now the norm, while ambiguity, paradox, irony, subtlety, and wit are fast disappearing. (p. 128)

Postman (1992), equally emphatic, envisions a "peek-a-boo" world in which readers, awash in a flood of decontextualized information, perceive only fragments of ideas: "now this event, now that, pops into view for a moment, then vanishes again" (p. 70). While Postman is in fact speaking of the effects of telegraphy and television, his words encapsulate the fears of hypertext critics who believe that electronic texts, which seem to simplify written language by slicing it into palatable bits that require no cognitive chewing and that are bland enough to accompany any intellectual meal, encourage a superficial mode of reading. For Birkerts, the future of text, particularly of *literary* text, will surely be bleak in such a world.

Where does reason lie? With the enthusiasts or the sceptics? How should we English teachers respond to this new medium that has shifted the solid stone under Gutenberg's press? Does *literary* text have a future in this medium and, if so, how might the cognitive processes and affective experience of reading literature change in the hypertext environment? These are the guiding questions of this dissertation, questions that I shall address in the ensuing sections: Part II, an examination of theoretical and empirical research on hypertext; Part III, a presentation of two studies with 100 readers of literary hypertext; and Part IV, a discussion of literary education in the information age.

But first, allow me to set the scene . . .

Revisiting the Circular Ruins

> *On the pretext of pedagogical necessity, each day she increased the number of hours dedicated to dreaming.*[3]

The papers were piling up on the right corner of Ellen's desk, some nested in folders of varying shades, others in clear plastic covers, still others clipped with simple title pages. Contemplating the accumulation now evoked in her an unwilling shudder: she could tell from their respective thicknesses that these projects were substantial. One hour each—she did the math while running her fingertips along the smooth edge of the heavy wooden bureau—plus final assessment and recording of marks . . . 30 hours. She could get two in today before her evening writing seminar, three tomorrow and the next day. That was eight. The rest would fall to the weekend. She made the final call for assignments and, knowing the response her words would elicit, paused accordingly.

Aaron, whose mother worked as a graphic designer at a local printing press, always waited for the final call. Now he rummaged in his bag, exclaiming in a mockingly apologetic tone: "What? Are the assignments due *now*? Wait—here's mine." He clamoured to his feet and made his way to the front. "I've just brushed the topic, really. It's not as thorough as it might be. But, of course, this is the nature of all research—*ain' it?*" He directed the last part, grinning, to the class. Then, performance over, dropped his cerlox-bound composition at the top of the pile where she might see the carefully crafted, professional looking cover throughout the rest of the afternoon.

Aaron's assignments always looked like something you might pick up at the local bookstore. The front of this one was glossy, magazine like, but printed on much sturdier paper. She peered at the computer-generated collage, and the inset promotional blurbs. "CD Enclosed!" was written in an opaque layer of text over the composite.

---

[3] Jorge Luis Borges, "The Circular Ruins," trans. Antony Bonner, *Borges: A Reader*, eds. Emir Rodriguez Monegal and Alastair Reid (New York: E.P. Dutton, 1981), p. 126. Interspersed throughout my own text in italics are selections from "The Circular Ruins." The teacher and pupil in Borges's story are in fact male; for my purpose here, however, I have changed all of Borges's pronoun references to female.

Ellen was simultaneously amazed and irritated by Aaron's precociousness, by his competence with things she didn't understand. The amazement she could deal with, but irritation was an alien emotion, insidious and unnerving. As an English teacher in a programme for gifted secondary students, she was used to being surrounded by young people with formidable intellects who would rocket forth to achieve successes she could only imagine for herself. To date, this reality had never disturbed her, for she knew herself to be a good teacher with a strong academic background, and she also knew that, however brilliant her students, they were yet fledgling readers and writers. Years spent studying, teaching and, more recently, writing literary text had given her the sort of wisdom that stems from diligence rather than genius; what she might lack in giftedness, she had come to realise, she made up for in experience and breadth of knowledge.

But there was something about students like Aaron that turned her confidence on its head. Clearly she didn't understand the young man's world, his mile-a-second digital culture. His life was 3-D, active-matrix, hyper-linked. He took notes in record time on his laptop, and updated his web portfolio while his classmates finished printing laboriously on the lines. Rumour had it that he was making more money than the school receptionist by working part-time as a web designer for an on-line company based in California.

Had he been speeding to greatness in some other field, she would have known how to respond. After all, plenty of rising stars had sat in these desks. Even today their spirits graced the school trophy cases near the front entryway in the form of dozens of posted newspaper articles about their successes. She had passed them this morning when she entered the building: Julia, her image slightly faded from the sun, smiling behind her Stradivarius, and Sam proudly holding aloft the university gold medal for highest academic standing—the first Arts student in the history of the institution to win the award. He had sat in the desk next to Aaron's only five years ago, and now he was pursuing graduate studies somewhere on the Eastern Seaboard.

"Ms. Evans," he'd said to her as he left her classroom for the last time, "Remember when I came here in September? I was gonna cop out at university. Take an easy science or psych. degree and then law. Remember?"

She nodded.

"You said 'that's fine—if you want to be an average lawyer. But if you want to be astute, multifaceted . . .' You said, 'don't throw away the first degree by making it a means to an end.' Remember? Thought about that a lot since then and I've decided I'm gonna major in philosophy and English." He laughed and shook his head, amused by his own revelation. "Not the easiest way to a good average, but that's what interests me—your course helped me realise that. Thought you might like to know."

She had loved to know. Moments such as these made up for all the troublesome aspects of teaching by reminding her of why she'd chosen this profession. Too overwhelmed to give a response of suitable magnitude, she'd thanked him earnestly, clasping his hand in hers, and had wished him luck.

Now she looked at Aaron, equally talented, standing just where Sam had stood that day in June years back. Why did she find him so intimidating? In some ways Sam had been just as caught up in things beyond her realm of experience during his tenure in her classroom. An award winner in science, he had lauded his knowledge in his essays, always devising topics that knit seemingly diverse subjects together: "Genetically Speaking, *The Children of Men*," "Shakespeare's Physics," "The Literary Face of Medical Science." She had encouraged his ingenuity, had even dubbed him "Poet Laureate of Scientific Letters."

For Aaron she could think of no such epithet, and could think of no words adequate for his hot-from-the-publishing-house assignments. She met his eyes, partly obscured by a thatch of curly hair, and registered what she perceived to be contempt for her pale, skinny person. She was a mouse of a woman: bred of the past, paper-thin, badly-bound. Yellowing. There were reams of people like her stacked on the shelves of the school district. She was only 42, but at times like this, when she stood face-to-face with the digital culture, she felt twice as old. She cast about for a remark—something off-the-cuff that would show her to be more than the old school marm he thought her to be: super graphics? interesting layout . . . ?

"Nice," she managed.

* * *

The purpose that guided her was not impossible, though supernatural. She wanted to dream a person; she wanted to dream her in minute entirety and impose her on reality. This magic project had exhausted the entire expanse of her mind; if someone had asked her her name or to relate some event of her former life, she would not have been able to give an answer. This uninhabited, ruined temple suited her, for it contained a minimum of visible world . . .

At first, her dreams were chaotic; then, in a short while they became dialectic in nature. The stranger dreamed that she was in the centre of a circular amphitheatre which was more or less the burned temple; clouds of taciturn students filled the tiers of seats; the faces of the farthest ones hung at a distance of many centuries and as high as the stars, but their features were completely precise.

* * *

Nice. What an utter insult to an artistic sensibility. She pushed Aaron's assignment into the middle of the pile and, temporarily relieved, panned the now-empty room. It was a horrible space, drab and colourless. The floor was covered with a grey-beige industrial linoleum, designed, apparently, to camouflage dirt, but giving, instead, the effect of permanent grime. The walls, of indistinguishable hue, seemed coated with a film of soot—as though from cigarette smoke, although she knew this couldn't be the case. She would have liked to redo everything, to replace the dreary motivational posters that hung on the bulletin boards with student work and to set up a reading area, but since the birth of her daughter she'd been part-time, and had fast learned that she must henceforth function in the marginal spaces relegated to those who try to juggle parenthood and work, and to do a good job at both. This was her room every second day—otherwise, it functioned as a rotational space for other displaced teachers. She didn't know who they were; she only knew that no one dared claim the walls.

To the west there was an entire bank of windows, but even they were ineffectual in terms of relieving the monotony. For some time she hadn't been able to pinpoint the cause of this: was it because the grey winter light lacked a certain human quality, or was it something about the windows themselves? One day she'd wandered

along the west wall, tracing a finger across the cold glass, peering through the sealed double panes and the protective exterior wire cage at the winter scene below. It was then that she'd noticed the dirt *between* the panes, unreachable, trapped in dead space, casting the room into eternal shadow.

As she considered the windows today, peering over her black-rimmed reading glasses and toying with the beaded lanyard that looped about her neck, she noted that one still bore the yellow stain of a smashed egg. It had been cemented there since graduation last year, bits of shell stuck in a downward spray on the glass. She'd mentioned it to the custodial staff in June, but supposed the wire made it difficult for them to reach.

She stretched, pushing away from the desk and arching her neck backward, her fingertips sliding over her shoulders and beneath the collar of her sweater, finding the muscle that plagued her. Now her eye wandered past the opaque glass blocks layered above the windows, taking in the grey smudge around a heating vent. The ceiling was lined with five rows of fluorescent lighting fixtures, but only two rows ever functioned. The tubes had been removed from the others. To save energy? Or was it because the cool, clinical glare of the lights was unbearable for most? In any case, she left them off whenever possible. Her gaze rested finally on the ceiling panels in the centre of the room where a number of brown water stains leered at the desks below. At times they seemed to take on a sort of three-dimensionality: reaching downward, gargoyle-like, from the ceiling. Of all the features in this room, she found them most disturbing because they reminded her of a story she'd read as a child about a moth collector who transfixed his live specimens to a display board with sturdy pins. Within a day or so, a circular brown stain appeared behind each victim. The thought of it made her shudder.

This, she mused with resignation, was her teaching universe: this drab, grimy, semi-lit corner of an institution without enough resources to clean windows, paint walls, and replace damaged tiles, let alone to provide teaching staff with the training and equipment they required to understand the Aarons of this world.

* * *

The woman lectured her pupils on anatomy, cosmography, and magic: the faces listened anxiously and tried to answer understandingly, as if they guessed the importance of that examination which would redeem one of them from the condition of empty illusion and interpolate her into the real world. Asleep or awake, the woman thought over the answers of her phantoms, did not allow herself to be deceived by impostors, and in certain perplexities she sensed a growing intelligence. She was seeking a soul worthy of participating in the universe.

After nine or ten nights she understood with a certain bitterness that she could expect nothing from those pupils who accepted her doctrine passively, but that she could expect something from those who occasionally dared to oppose her.

* * *

"Ellen. ELLEN. What the hell are you doing?" With head flung back and hands kneading her shoulders, Ellen sat behind her large wooden desk, eyes glued to the ceiling. Now she stilled her hands, but otherwise maintained her position, considering how she might avoid an interchange with Curt this afternoon. He was here, no doubt, to come to verbal blows with her about the talk she'd given his English class this morning. He'd asked her to speak about the nature of tragedy, and in particular about the motivations of the tragic hero. She'd balked at first—convinced he was setting her up. Curt never asked anyone's opinion, let alone hers. Nietzsche-esque in his deportment, he was the super-hero of the English Department: loved by his students, deferred to by his peers, cherished by the administration. He was the champion of Northrop Frye, the quintessential humanist. He was also the man who gave his senior students the previous year's diploma exam on the first day of class . . . "just to get a sense of where they're at." Just to get a sense of where they *should be* at, more like. He did it, she thought, because he wanted minimal standard deviation between his class marks and the diploma exam marks. Because he couldn't stand being wrong. Ever.

She gave him a sidelong look, peering across the rims of her reading glasses without bringing her head forward. "What, Curt?"

"What? You should know what! I love animals more than humans." She was momentarily stunned—so this was why he had left the room in the middle of her talk. Then the irony of his statement overcame her and she found herself struggling not to laugh. For someone who claimed to be a humanist, his was an interesting revelation. But his voice began to quaver: "How can you speak so matter-of-factly about the way those bulls are treated?"

Absurd though it was, the situation required some tact. She straightened herself, removed her glasses, and turned toward the imposing, white-haired man who filled the doorframe. Perhaps ten years her senior, Curt was a striking-looking person, strong and solid with a ruddy complexion. He dwarfed her physically, and she supposed he thought he dwarfed her intellectually, as well. Considering him, she unconsciously folded her arms across her midriff: one hand plucked nervously at the material about her waist and the other, hanging loosely from her wrist before her neck, traced the contour of her protruding collarbone. "Sorry if I upset you," she mumbled, "but you didn't stay for the entire talk, so you didn't hear my point."

He left the doorway and strode into the room. She'd arranged the desks such that three rows, positioned against each side wall, faced in toward each other, flanking a large central aisle. This was her stage, and now Curt stood in the centre of the space, directly beneath the brown gargoyles. She wondered if, being so tall, he found them unnerving. Their long, protruding tongues were practically lapping his head, after all. "The point, *Ellen*"—he spat out her name distastefully—"was supposed to be about tragedy, not animal abuse. I'll say it now as I've said it always: I *can* not and *will* not tolerate animals being spoken of this way in my classroom."

Ellen paused. Her left hand had deserted her collar bone and now cradled her chin, with forefinger drifting lightly across her mouth. The reading glasses hung askew on her chest, and her unfocused eyes rested on the stack of assignments before her. "Curt," she began slowly, speaking from behind her finger and without looking at him, "you asked me to talk about motivation, and that's what I tried to do. You asked me to bring my performance experience to the question, and that's what I tried to do. Do you really think I condone what goes on in the bull rings?" She dropped her hand and met his eyes. "That *was* the point, Curt, it *revolted* me. It made me feel physically

sick. I watched those animals being goaded, wounded, slaughtered, and I listened to everyone cheering and singing—including my own husband—and I thought . . . *what the hell is going on here*? . . . At the end the bull's eyes were rolling in its head, and its legs were jerking, and its blood was seeping out into the sand. And this stupid little man, dressed in brocade and satin, was lording over it as though he'd just redeemed humanity. I wanted to leave, but the crowds were insane . . ."

She paused, waiting for a response: waiting for him to cover his ears, tell her to shut up, storm out of the room. Instead, he pulled Aaron's desk roughly into the aisle, turned it around, and sat on top of it, using the attached wooden seat as a footstool. Elbows on knees, he dropped his chin into his hands: "So?"

"So, when the first fight was over I did leave. I told Peter he had to take me back to the hotel because I didn't feel safe walking alone in Pamplona during the festival. So I sat in the hotel for the rest of the afternoon listening to the cheers coming from the *Plaza de Toros*, trying to block the sound out and to understand it at the same time . . . Finally, I realised: it's not about the bull, it's about the matador. It's about honour. You have to see these matadors, Curt. The way they stand—bolt upright. The way they move. Like dancers. Like kings. They believe what they're doing is entirely honourable. In fact, they believe it to be the most honourable thing they could possibly do on this earth. If you don't understand this basic fact, you don't understand the bull fight. Now, when I try to get inside the mind of a character whose actions repulse me, I think about the matador. On a very basic level, tragedy cannot be about animals, it can only be about people." That was it. That was what she'd told the kids—except the part about her husband cheering and the bull dying. She watched him, perched on the desk in the centre of the room, and it suddenly occurred to her that maybe his aggressive behaviour stemmed from insecurity. He never took risks, and he never asked questions except when he wanted to know other people's performance results. She waited.

"I just think it's cruel and it should be stopped."

"You may be right, but that's another question, isn't it?"

"I know I'm right."

* * *

One afternoon (now afternoons were also given over to sleep, now she was only awake for a couple of hours at daybreak) she dismissed the vast illusory student body for good and kept only one pupil. She was a taciturn, sallow girl, at times intractable, whose sharp features resembled those of her dreamer. The brusque elimination of her fellow students did not disconcert her for long; after a few private lessons, her progress was enough to astound the teacher. Nevertheless, a catastrophe took place. One day, the woman emerged from her sleep as if from a viscous desert, looked at the useless afternoon light which she immediately confused with the dawn, and understood that she had not dreamed.

* * *

"Since you're here, did you have Aaron last year?" There was no point in debating with a matador.

"Mr. Technology? Yup."

"How was he for you?"

"He was a pain at first, but after I banned his laptop he faded into the woodwork." Suddenly reanimated, he pulled his hands from his chin and straightened up. "You let him use his laptop?"

She nodded.

"Have to ban it. That's his problem. When he has his laptop he can't concentrate on anything—just flips from thing to thing all class long."

"But he uses his laptop to take notes—"

"Can't be sure of that. Can't tell what goes on behind the screen. Besides, what's wrong with pen and paper?"

"Nothing, but—"

"Nothing. In fact, they're better. If he's writing by hand he has to slow down. He actually has to process what he's doing. When he took notes in my class, he'd whiz through them in half the time of the others and then start on something entirely unrelated. You can tell him not to, but he won't listen to you. You think he learns anything that way? Just jumping from thing to thing? That's the problem with kids these days: they're like amoebas—no attention spans." Curt was in his stride again,

emphasising each statement with decisive arm gestures. "Case in point: took my kids to Epcot Centre last year. Even now I can't believe I broke down. What an insight into the dilapidation of the human mind. It's an amusement park masquerading as a museum. They have country pavilions with artefacts on display. Supposedly authentic. But everything is utterly shallow. Every pavilion features a movie about the country it represents, and every movie is eighteen minutes long." He cupped his hands to his mouth: "'The movie you're about to see,' they'd say, 'is eighteen minutes long. If your feeble minds can't take that, you should go outside now and eat at the fried food counter that is conveniently located directly opposite the exit.' Eighteen minutes long. Obviously Disney's done some research into the modern-day attention span. What scares me most is when I see kids like Aaron I begin to think that they might have over-estimated the number—"

"So you banned his laptop?"

"He could bring it to class as long as he kept it in its case."

"How'd he respond?"

"Not as badly as I expected. Guess he'd been through the fight with Bill and Fatima the year before."

"They banned it as well?"

"Why do you look so incredulous? Are you trying to tell me he's always on-task in your classroom?"

"No—"

"So what's your problem? You know, Frye speaks of vertical and horizontal planes of knowledge . . ."

Ellen stole a glance at her watch. Two papers to mark tonight, supper for Sarah and Peter, graduate seminar in two and a half hours, and now Curt was off on his Frye thing again. She'd seen it every time she entered his classroom: the entire board, end to end, covered with quotes from Frye. The kids were expected to get there early to copy them down.

" . . . so Aaron's thinking is horizontal: he touches on this and that—a sound byte here, an image there—but he doesn't have the patience to persevere with any one thing. Shows in his work. It'll catch up with him in the end. Kids who are more

vertically inclined—the kind who stick with one thing and really struggle to fathom its depths of meaning—those are the kids who'll go a long way."

"What about this?" She pulled Aaron's assignment from the middle of the pile and pushed it toward Curt. "You don't think he was 'vertically inclined' when he worked on this?"

Spinning his legs out to the side and kicking off Aaron's desk in a single motion, Curt approached. "What is it?"

He perused the cover for a moment, then, pinching the bottom right corner disdainfully between fore and index finger, flipped it over. "There's only one page! What's this supposed to be?"

"His essay on *Lear* and *A Thousand Acres*. There's a CD-ROM."

He lifted the page and peered at the CD-ROM, enclosed in a transparent plastic leaf beneath. "Oooh, a minimalist assignment. And you *let* him do this? I have a policy that students aren't allowed to hand in their work on disks. How do you correct something on disk? Just means you have to pay the student's printing costs so you can mark the paper properly."

"Usually I don't let them, but he asked in advance, and his reasoning made sense. I gave a number of topics. One was on textual form. It was something I wanted to try a few years ago after hearing Jane Smiley speak about how *A Thousand Acres* was her version of an academic paper on *Lear*. My topic . . ."

She paused. Curt was pulling hard at plastic, trying to get the CD-ROM out of its pocket.

"Curt?"

He looked up. "What? I'm listening."

"So one of my topics invited students to examine form. If they didn't want to be adventuresome, they could simply discuss the difference between drama and narrative; if they wanted to experiment with the structure of the academic essay, they could do that too. I gave the topic last year as well, but Aaron is the only student who's ever tried it. He came up right away and said he wanted to do his essay in hypertext—"

"What's hypertext?"

"Ha! That's what I said! It's the sort of text you find on the Internet, or on the CD-ROM encyclopaedias in the library. With links to other bits of text. Course I'd seen it, I just didn't have a name for it."

"I don't let my kids cite on-line sources. They're useless. You know two years ago I had a student in the regular programme paste an entire encyclopaedia entry into her essay? Guess she thought I wouldn't notice because everything was in the same font. Only she was in such a rush to finish her paper over lunch that she forgot to delete the Microsoft Encarta copyright line. Testament to her brilliance. As if I wouldn't have noticed that she went from functionally illiterate to reasonably accomplished in one line. Problem is kids can buy student essays off the Internet. Then it's harder to tell they're cheating. I have them write 75% of their essays in-class now." He banged his fist on the desk. "Puts the brakes on that. Tell you what, I don't even have a computer at home. Don't want *my* kids—"

"Curt, you told us." How could she forget his ranting during last week's staff meeting about technology integration? How could anyone forget it. She reached for Aaron's assignment, but he held it from her with his right hand and stretched his left out toward the rest of the papers.

"Come to think of it, I wouldn't let any of my kids hand in stuff like this." He splayed his hand over the top-most paper and fanned out the pile of assignments across the desk. "They aren't supposed to put them in duo tangs. Next year their profs will mark them down because they don't know proper style. This one's OK." He picked an assignment with a simple cover page from the pile and held it aloft. "Cory. She was in my class last year. Good kid. But this . . . " He shook his head at Aaron's assignment, now swinging from its cerlox binding between the fore and index fingers of his right hand. Both papers remained suspended for a moment, then he let them fall onto the pile and, chuckling, turned toward the door. "Gotta go. Good luck marking that essay . . . or whatever you call it."

* * *

All that night and all day long, the intolerable lucidity of insomnia fell upon her. She tried exploring the forest, to exhaust her strength; among the hemlock she barely succeeded in experiencing several short snatches of sleep, veined with fleeting, rudimentary visions that were useless. She tried to assemble the student body but scarcely had she articulated a few brief words of exhortation when it became deformed and was then erased. In her almost perpetual vigil, tears of anger burned her old eyes.

She understood that modelling the incoherent and vertiginous matter of which dreams are composed was the most difficult task that a person could undertake, even though she should penetrate all the enigmas of a superior and inferior order; much more difficult than weaving a rope out of sand or coining the faceless wind. She swore she would forget the enormous hallucination which had thrown her off at first, and she sought another method of work.

* * *

"Hey, Ellen!" Curt had returned, this time jingling car keys, his head the only part of his body visible in the doorway. "Wanna know *why* everybody raves about Disney? Because they keep the place *clean*. That's the number-one reaction. Can you imagine? God knows you're speaking of an intellectual wasteland when the most common adjective used to describe it is *clean*. Here's something that'll help you with your assignments." The head vanished. A piece of paper slid across the desk nearest the door and floated to the floor.

Listening to his footsteps fade down the hallway, she reassembled her pile. There was no time for marking now, so she gathered her belongings from the desk and looked about to ensure that no remnants of her presence would disturb tomorrow's teachers. On the board were a few notes from the last class:

dialogue (dia [Gk] = two) + (logos [Gk] = speech)
monologue (monos [Gk] = one) + (logos)
soliloquy (solus [L] = alone) + (loqui [L] = speak)

Coat in hand, she picked up the eraser and deliberately dragged it over the neatly-scripted lines, obliterating all but one of the words. Then she selected a piece of chalk and began writing, pushing her letters into the board until the chalk snapped under the pressure and spun across the floor. On her way out, she picked up Curt's piece of paper. It began:

> **MLA manuscript guidelines**
>
> Materials
>
> Use 8½" x 11", 20-pound white paper. If the paper emerges from the printer in a continuous sheet, separate the pages, remove the feeder strips from the sides of the paper, and assemble the pages in order. Secure the pages with a paper clip. Unless your instructor suggests otherwise, do not staple the pages together or use any sort of binder . . .

She stuffed his handout among the assignments and shut the door. On the board, faintly visible in the grey dusk, a single word remained:

> *monolog* **IST**

* * *

Her misgivings ended abruptly, but not without certain forewarnings. First (after a long drought) a remote cloud, as light as a bird, appeared on a hill; then, toward the south, the sky took on the rose colour of leopard's gums; then came clouds of smoke which rusted the metal of the nights; afterward came the panic-stricken flight of wild animals. For what had happened many centuries before was repeating itself. The ruins of the sanctuary of the god of Fire were destroyed by fire. In a dawn without birds, the wizard saw the concentric fire licking the walls. For a moment, she thought of taking refuge in the water, but then she understood that death was coming to crown her old age and absolve her of her labours. She walked toward the sheets of flame. They did not bite her flesh, they caressed her and flooded her without heat or combustion. With relief, with humiliation, with terror, she understood that she also was an illusion, that someone else was dreaming her.

Ω

Home

I have commenced with narrative. This is curious in some respects, for I do not profess to be a creative writer; but when I sought a beginning for this work, I was repeatedly reminded of the way in which all text informs itself in a circuitous fashion, referring backward and forward within itself, as well as outward to other texts, just as readers, in Rosenblatt's (1938/1968) words, draw "on past experience of life and language to elicit meaning," and reorganise their former experiences "to attain new understanding" (p. 26). I resolved to begin *in medias res*: in an English classroom, with students and teachers and texts, where reading and writing are the subjects of common parlance, and where questions of how readers interact with and respond to different forms of literary text are of utmost importance.

The central figure in the foregoing narrative, whom I have called Ellen, is a forty-two year old practising public high school English teacher who, in the course of her twenty-year career, has taught all junior and senior high grades and most academic groupings (i.e., special needs, International Baccalaureate, and so on). From my own years teaching in the same urban school division as Ellen, I know her to be a widely-respected and competent member of the profession whose gifts for writing and acting, and whose commitment to life-long learning, inform her craft on a daily basis. Through the course of two formal interviews and a number of subsequent meetings, she spoke frankly about her teaching and about her feelings regarding technology integration in the English classroom. She spoke of her joys (her students' accomplishments and her sense that she had been a positive influence on some) and her troubles (for example, her distaste for her drab, ill-maintained workplace and her feeling of inadequacy with respect to technology). I should make it clear from the outset, however, that I took liberties with the information I gleaned from Ellen, selecting some of her anecdotes for inclusion above others, and supplementing her material with my own and with the experiences of other high school teachers with whom I spoke informally during this phase of the study. For example, although her conversation with a conservative colleague (here named Curt) over a tragedy lesson is largely true to her own words, the subsequent conversation she has

with him about Aaron is a fictional account meant to introduce some questions about technology and pedagogy she raised in the course of our discussions, as well as some common issues that are raised in published writings on technology and learning.

Thus, "Revisiting the circular ruins," written after the fashion of creative non-fiction, is reminiscent of Ellen's experiences, but does not parrot them; rather, it is a composite of many voices—Ellen's, my own, Borges's, and so on. In the course of writing and editing the piece, I consulted Ellen repeatedly to ensure that the tale I was weaving out of the various threads of text I had about me at the time constituted a realistic rendering, in her experience, of teaching English at the high school level at the beginning of the twenty-first century. I will take up certain aspects of this narrative throughout the ensuing parts. At times the story figures largely, and at times not; regardless, I have positioned it foremost in order to underline the ultimate importance of the classroom in this study. Indeed, the English classroom is literally the foundation of this investigation, for it was during my own time as a teacher of secondary English language arts that my interest in computers as vehicles for text saw its genesis.

In writing on the purpose of narrative, Irving (1869) observes the following:

> I consider story merely as a frame on which to stretch my materials. It is the play of thought, and sentiment, and language; the weaving in of characters, lightly, yet expressively delineated; the familiar and faithful exhibition of scenes of common life; and the half-concealed vein of humor that is often playing through the whole . . . (p. 64)

This, then, is how I should like "Revisiting the circular ruins" to function in the larger body of my own text: it is the frame on which I shall stretch my materials. Or perhaps, more properly, it is the hub of this text, a central point from whence various spokes of thought emerge. Were this an online document, it would be "home."

Part II

Reading the ruins

Hypertext theory and the question of reading

The excitement with which hypertext has been received by many literary critics has largely to do with the ways in which it makes explicit ideas about textuality that are central to contemporary critical theory. Bolter (1991a), Landow (1997) and Lanham (1993), to name a few, have all remarked at length on the numerous connections between theory and technology. Landow (1997) even goes so far as to say that the two fields have "converged," observing that "hypertext creates an almost embarrassingly literal embodiment" of principles "that had seemed particularly abstract and difficult when read from the vantage point of print" (p. 65). Bolter (1991a) exclaims along similar lines: "What is unnatural in print becomes natural in the electronic medium and will soon no longer need saying at all, because it can be shown" (p. 143).

Apparently what can be "shown" in hypertext is the post-structuralist notion that language is a much less stable system than classical structuralists such as Saussure would have us think. Eagleton (1983) elaborates:

> Instead of being a well-defined, clearly demarcated structure containing symmetrical units of signifiers and signifieds, [language] now begins to look much more like a sprawling limitless web where there is a constant interchange and circulation of elements, where none of the elements is absolutely definable and where everything is caught up and traced through by everything else. (p. 129)

Evident in much post-structuralist discourse, as illustrated here, is the applicability of its descriptors—in this case, limitless, web, interchange, and so on—to the hypertext writing spaces that emerged some time later. Hypertext pioneers, according to Landow (1997), seem to have unwittingly provided a laboratory in which critical theorists might test their ideas about literature and reading. In the ensuing sections I will take up some of these ideas—in terms of the ways in which they both illuminate and confuse the question of

hypertext reading—by way of providing a background for this study. The preceding narrative, which illustrates some of my key points, serves as a window on the discussion.

The literature of exhaustion

In "Revisiting the circular ruins," Ellen's interactions with her students and her colleague, Curt, are punctuated by her reveries—dreams in which she, god-like, seeks to model her students in her own image (or, more precisely, in which she seeks a student who is *worthy* of being modelled in her own image, of participating in her universe). While I will discuss the implications of this enterprise on a pedagogical level in Part IV, for the moment I wish to consider the implications of the dream sequences on a textual level.

Ellen's dreams are excerpts from "The Circular Ruins" (Borges, 1981), a story that, as the title suggests, is recursive and fragmentary—even in spite of the fact that it is considered to be one of the more complete pieces in the *Ficciones*. The tale begins with the mysterious nighttime arrival in a nameless place of a "gray man" from "one of those numberless villages upstream" who takes up residence in the circular ruins of a burned temple and sets about his magic purpose: "to dream a man" (p. 124). At first he dreams he is a teacher, lecturing his students in subjects that are fundamental to his own project: anatomy, cosmography and magic. He hopes to find among the "clouds of taciturn students" a being he might mould in his own image. But when this approach fails, he begins again and eventually, Pygmalion-like, asks the god of the temple to animate the product of his dreams, the perfect form of a young man. The deity, Fire, complies on the condition that the dreamed phantom be instructed in the rites of the sanctuary and sent forth to glorify him in a similar ruined temple downstream. All this comes to pass; having fulfilled his purpose, the dreamer lives on, fearing and longing for his son until such time as his misgivings are ended when history repeats itself: the ruins of the sanctuary of the god of Fire are again destroyed by fire. As he stands in the sheets of flame, unharmed, the dreamer realises the essential paradox of his being: "he understood that he also was an illusion, that someone else was dreaming him" (p. 127).

Borges's writing is of great interest to hypertext theorists because it marks a significant departure from the narrative traditions of the nineteenth century and suggests,

along with the work of authors such as James Joyce and Virginia Woolf, that we may be in the process of an essential shift in literary form. As Bolter (1991a) observes,

> The *Ficciones* are tiny pieces without much plot or characterization, pieces that are utterly insignificant by the standards of the 19th-century novel. With Borges we have the sense that a long literary tradition is breaking down, that the novel and perhaps the monograph too are used up. (p. 138)

Bolter takes up John Barth's (1967) notion that Borges's work might be characterised as the "literature of exhaustion" in that it points to the restrictiveness of modern technological vehicles for story—that is, modern technological vehicles before the advent of electronic forms such as hypertext. In Bolter's words: "For Borges literature is exhausted because it is committed to a conclusive ending, to a single storyline and denouement. To renew literature one would have to write multiply, in a way that embraced possibilities rather than closed them off" (p. 139).[1]

Bolter also observes that, because Borges treats reading and writing as "synonymous with life itself," the theme of exhaustion applies "not only to literary form, but also to the human condition" (p. 138). This is certainly reflected in "The Circular Ruins," a story that begins in the dead of night at the end of a tiresome journey and centres entirely on the activity of dreaming. The gray man's magic project is described in

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[1] Interestingly, although writers like Joyce and Woolf (particularly Joyce) are often cited as heralds of a liberating change in literary form (Bolter, 1991a; Landow, 1997; Snyder, 1996), Woolf (1925/1986) herself calls for moderation in discussions about the evolution of literature:

> In making any survey, even the freest and loosest, of modern fiction, it is difficult not to take it for granted that the modern practice of the art is somehow an improvement upon the old . . . And yet, the analogy between literature and the process, to choose an example, of making motor cars scarcely holds good beyond the first glance. It is doubtful whether in the course of the centuries, though we have learnt much about making machines, we have learnt anything about making literature. We do not come to write better; all that we can be said to do is to keep moving, now a little in this direction, now in that, but with a circular tendency should the whole course of the track be viewed from a sufficiently lofty pinnacle. (p. 1993)

Woolf's position is perhaps more reasonable than that of scholars who foretell a radical shift (presumably in a common direction—that is, toward multiplicity) in literary form, for it acknowledges both the diversity of possibility that takes writing "now a little in this direction, now in that," and also the strength of the traditions out of which new forms spring. In short, Woolf recognises that experimentation on the part of a few does not necessarily portend a radical shift on the part of the whole.

the first instance as one that has "exhausted the entire expanse of his mind" (p. 124) to the point that he suffers amnesia. Even his sleep is restive, for it is given over entirely to the weighty task of creation. Thus, when insomnia eventually befalls him, it is a relief to the reader—as though we were rescued from a particularly troublesome nightmare; but this relief is shortlived, for the gray man immediately undertakes to "exhaust his strength" in order that he might return to the arduous chore of his dreams. By the end of the tale, we cannot distinguish sleep from animation, phantom from substance. We are caught in an infinite regression of dreamers dreaming dreamers and the text exhausts itself in recursivity. In a hypertext environment we can well imagine that the mouth of the text would catch its tail, that it might be entered at any point, that it would cease to have a discernible beginning or ending.

The pluri-dimensional text

But if the possibilities of print are being exhausted, as Bolter would have us believe, what is the future direction of literature? Long before the advent of hypertext, Derrida (1976) asserted that the linear writing forms that have dominated print culture represent "only a particular model" that has "repressed" rather than abolished "pluri-dimensional symbolic thought" (p. 86). Writing, he claimed, is "rooted in a past of non-linear writing"; to rejuvenate it, we must "attempt to recapture the unity of gesture and speech, of body and language, of tool and thought" (p. 85). He predicted that change was imminent:

> The end of linear writing is indeed the end of the book, even if, even today, it is within the form of a book that new writings—literary or theoretical—allow themselves to be, for better or for worse, encased . . . Beginning to write without the line, one begins also to reread past writing according to a different organization of space. (Derrida, 1976, pp. 86-87)

A similar dissatisfaction with the status quo was voiced by Barthes (1974), who likewise imagined a writing space "without the line":

> We shall therefore star the text, separating, in the manner of a minor earthquake, the blocks of signification of which reading

> grasps only the smooth surface, imperceptibly soldered by the movement of sentences, the flowing discourse of narration, the "naturalness" of ordinary language. The tutor signifier will be cut up into a series of brief, contiguous fragments, which we shall call *lexias*, since they are units of reading. (p. 13)

For Bolter (1991a), hypertext is Barthes's starred text, and the realisation of Derrida's pluri-dimensional space: "in all this Derrida was prescient, but he could not know that electronic writing would be the new writing to which he alluded" (p. 116). According to this view the experimental texts we see in Borges's collected work—stories like "Garden of Forking Paths," which is a frequent player in the writings of hypertext theorists—are harbingers of necessary change. In the new writing space, Landow (1997) predicts, the ideas of Derrida, Barthes, Borges and so on will come to fruition: "conceptual systems founded upon ideas of center, margin, hierarchy, and linearity" will be abandoned and replaced with systems founded upon ideas of "multi-linearity, nodes, links, and networks" (p. 2).

The text as ruin/rune

This, then, is the vision of hypertext enthusiasts, but are we to concede their points? The notion that books are on the verge of extinction is already tired, having exhausted itself in speaking of exhaustion. It appears unlikely, after all, that hypertext will replace print for the same reasons that radio and television have not replaced print: the book, in its various forms, is merely one vehicle for information and entertainment that co-exists alongside many other vehicles for information and entertainment. It has done so since its inception centuries ago, and it is likely that it will continue to do so for many generations.[2] Predicting that hypertext will undermine the book's foundation seems a pointless enterprise, for it brings us nowhere in terms of understanding the nature of either genre. When I speak of the text as ruin, therefore, I am not referring to the demise of the book—I do not wish to imply decay; rather, I would like to take up Borges's motif and to consider hypertext as a form of textual ruin that might serve as a catalyst for

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[2] A recent report issued by the Association of American Publishers (2001) indicates "US book sales totalled $25,322,700,000 in 2000, a 3.4 percent increase over 1999" (¶ 1). Statistics Canada (2001) also reports increases in book sales between 1992 and 1999.

creative imaginings; for when we consider many of the theoretical claims about the genre, the image seems particularly appropriate.

By way of engaging this metaphor, I wish to consider for a moment the Anglo-Saxon poem "The Ruin," a depiction of a deserted Roman city, likely Aquae Sulis (Bath), written on two leaves that are badly scarred by fire (Alexander, 1987, p. 27). A ruin in itself—some sections cannot be made out because of the extent of the damage to the manuscript—the poem nicely captures the experience of wandering in and about the remains of an ancient site, particularly one so extensive as that described in this early piece. The narrator takes us carefully through the rubble, first remarking on the snapped roofs and fallen towers and noting where frost has scoured the stone work, and then commencing a process that, it seems, is an essential part of a visit to any ruin: he reconstructs the place in his mind, rebuilding the walls and gates with the help of imagined masons and blacksmiths, and peopling the meadhalls with brave and contented warriors:

> Bright were the buildings, halls where springs ran,
> High, horngabled, much throng-noise;
> These many meadhalls men filled
> With loud cheerfulness . . . (Alexander, 1987, p. 28)

To anyone who has visited such a place, the poem strikes a chord, for it seems that the natural response in the presence of a ruin is to imagine it whole and to begin to build about that imagined wholeness a series of narratives (and I should note here that I am speaking of the sort of place that is well distant from the cause of its demise, for clearly our response to the remains of a recent disaster would be very different). The allure of the ancient ruin, therefore, is not so much in the aesthetic appeal of what is there as it is in the mystery of what is not there. We become reader-like in the presence of such incompleteness, accepting an invitation from the cosmic author of a stony text (rune) to join in the business of bringing it to life. And of course, every person who wanders through the half walls and toppled towers will conjure up a different world and fill it with different voices.

On a literal level, the imaginative process described here is not unlike the act of perusing the text of "The Ruin" itself; readers must find ways to make sense of the

textual lacunae and cruces of this poem that has through time become an embodiment of its subject. This analogy brings to mind the view of reading held by Laurence Sterne in the eighteenth century and revived by Iser (1978; 1980) some 200 years later. Sterne (1767/1986) observes,

> Writing, when properly managed . . . is but a different name for conversation: As no one, who knows what he is about in good company, would venture to talk all; —so no author, who understands the just boundaries of decorum and good breeding, would presume to think all: The truest respect which you can pay to the reader's understanding, is to . . . leave him something to imagine, in his turn, as well as yourself. For my own part, I . . . do all that lies in my power to keep his imagination as busy as my own. (p. 129)

Thus, as Iser (1980) elaborates, a literary text becomes "something like an arena in which reader and author participate in a game of the imagination. If the reader were given the whole story, and there were nothing left for him to do, then his imagination would never enter the field, the result would be the boredom which inevitably arises when everything is laid out cut and dried before us" (p. 51). According to this view, all literary texts are ruin-like in that they are spaces, in various stages of completeness, through which readers are invited to wander, and which they may reconstruct, within reason, according to their fancy.[3]

Literary hypertext, it seems, simply pushes this metaphor of text as ruin a little further, most obviously by challenging the convention of "linear" writing in ways of which Derrida and Borges, if their own writings are any indication, would clearly approve. It does this by moving away from the notion of a pre-conceived, logical, textual order and toward an increasingly fragmented text in which different narrative strands may suddenly diverge, converge, or run parallel to one another. In this respect, it has been argued that literary hypertext has the potential to be much more life-like than print, more

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[3] Clearly not anything goes. Should a reader of Hardy's *Tess of the Durbervilles*, for example, fail to construct the Chase scene along certain lines, the remainder of the novel becomes illogical. Regardless of how the unnamed event is imagined by readers—as rape or seduction—it is essential to the narrative that it be understood as the moment in which Sorrow is conceived, both literally and metaphorically.

representative of the ways in which we encounter the world; for our personal narratives are, after all, always diverging from, converging with, or running parallel to the personal narratives of those about us (cf., Landow, 1997). To return to Aquae Sulis, fragmenting the text in this manner is somewhat akin to taking away, or limiting access to, the sort of numbered maps and information plaques that are frequently found at historic sites: like the narrator of "The Ruin," visitors to such unsigned places must make what they can of the blocks of signification that are scattered about them.

Dreaming the self

A final point might be made in drawing a comparison between the themes in Borges's text and the process of reading. In "The Circular Ruins," the gray man is ultimately revealed as an illusion. Having spent much of his life dreaming his "son" in his own image, he accepts the inevitability of death and walks complacently toward the sheets of flame that are consuming the sanctuary of Fire. Surprisingly, they do not burn him—let me cite the sentence again: "With relief, with humiliation, with terror, he understood that he also was an illusion, that someone else was dreaming him" (p. 127). Fire consumes fire; a dreamer dreams a dreamer. And yet, we are led to believe that perhaps there is only one fire, only one dreamer. Just as fire consumes itself, so the gray man has spent his life dreaming a being indistinguishable from himself. In Borges's text, the self and the other conflate.

To carry this motif a step further, so too do reader and text conflate in the act of reading; for when we reconstruct the ruin of a text, we necessarily read ourselves into those empty spaces that are begging to be peopled. Literary reading, according to this view, is an exercise in conceptualising the self. The question that arises with respect to hypertext is this: if the medium does indeed push the metaphor of text as ruin a little further—if, in its fragmentary nature, it leaves more "room" for the reader—might it not facilitate the process of self-conceptualisation better than does print text? And, if so, is it in fact a better vehicle for text than earlier technologies, one that is destined to improve the experience of literary reading?

Hypertext theorists on the question of reading

Let us consider some theoretical claims about hypertext and reading that may shed light on this question. Three issues, among others, are identified by hypertext theorists as integral to the question of reading: i. In what way have the roles of writer and reader shifted, and how does this role-shifting modify the reading experience? ii. How does the causal indeterminacy of hypertext combined with its apparent lack of closure modify the reading experience? iii. How does the transitional device in literary hypertext, the link, modify the reading experience?

i. Playing, performing, and plotting: Metaphors of reading in the new medium

As we have seen, there are those who believe that hypertext is the natural next step in the development of creative writing, that there is visible in the fiction of the twentieth century a straining against the boundaries of conventional print forms, a desire to push back the envelope—indeed, to cast it off altogether. If we concede this argument, hypertext comes timely upon us, offering what print volumes cannot: it is a writing space that is multiple, pliable, viable in the postmodern age; and where the author has found a freedom of sorts, so too has the reader.

Noting its roots in computerised, text-based, adventure games, critics like Bolter (1991a, p. 125) claim that hypertext extends to readers a player's role in a sense that print convention precludes. "Reader-players" may fashion electronic documents by choosing their own paths; further, in what Michael Joyce (1995) has referred to as "constructive hypertext," they might reconfigure both the space and the content of the text by adding their own nodes and links. Johnson-Eilola (1993) encapsulates how author and reader roles conflate in the hypertext environment:

> More than any previous text technology, hypertext encourages both writers and readers—roles we might now provisionally combine under the label of hypertext "writer/readers"—to confront and work consciously and concretely with deconstruction, intertextuality, the decentering of the author, and the reader's complicity with the construction of the text. (p. 383)

Some, of course, would argue that readers have always been "players" because they necessarily reconstruct texts within their own world views (i.e., Rosenblatt, 1938/1968 and Iser, 1978), and yet there remains a difference between the activity of reading literary text in print and reading literary hypertext. Readers of multi-sequential fiction must do more than reconstruct a text that exists in a predetermined order: they must engage in an activity of construction *and* reconstruction, both determining causal relationships and filling perceived gaps in meaning with their own narratives. Ultimately, the two activities become inseparable, for the act of construction (determining causation) may be viewed as another way of reading oneself into the text. The result, according to Landow (1997), is "an active, even intrusive reader" who feels a sense of agency because the hypertext writing space has infringed "upon the power of the writer, removing some of it and granting that portion to the reader" (p. 90).

In attempting to describe the changing roles of authors and readers in the new medium, Bolter (1991a) also compares hypertext reading to an exercise in performance:

> In the electronic writing space all texts are like dramas or musical scores. The reader performs the text, perhaps only for himself or herself, perhaps for another reader, who may then choose to perform the first reader's text for others. In this way electronic writing defines a new level of creativity, indeed a myriad of new levels that fall between the apparent originality of the Romantic artist and apparent passivity of the traditional reader. (pp. 158-159)

This view supports Landow's contention that readers of this medium are empowered. No longer relegated to marching their gazes, like so many soldiers, from top to bottom, from left to right, from page to page (cf., Johnson-Eilola, 1994, p. 197), hypertext readers *play*. They *perform*. They *celebrate* text.

While such metaphors may be compelling—indeed, they conjure the image of countless readers dancing in front of their computers, freed from the terrible bondage of print—they are not necessarily supportable. This has become clear over the last decade as the small corpus of literary hypertext has grown and our understanding of the genre has matured. These days it seems likely that hypertext theorists would be the first to concede

that the presence of multiple narratives does not automatically empower readers. Rather the contrary, in literary hypertext, the author tends to remain a *tour de force*, sinister even in his or her seeming open-handedness. Readers have choice lavished upon them, but what is choice in the absence of the knowledge of where that choice might lead? Like Portia's suitors, readers must infer much from little: their choices are not informed, but hazarded—and consequently they can be hazardous to the credibility of the text.

By way of example, we might consider one of the few published studies with readers of literary hypertext. Douglas (2000) describes the bafflement her students felt in reading a hypertext version of Borges's "The Garden of Forking Paths."[4] The early experimental hyperfiction she gave students to read in her writing class, entitled "Forking Paths," consists of the text of Borges's story fragmented into several nodes and supplemented by a series of additional nodes written by Stuart Moulthrop. In this respect, it is rather like the narrative of Ellen in that it is a montage, an exercise in intertextuality meant to demonstrate (presumably) how texts cease to have boundaries in the new medium (cf. Moulthrop, 1994). However, unlike the print text upon which "Forking Paths" is based, there are several possible routes through this electronic text. (Imagine, if you will, Ellen's story divided into nodes and presented in no particular sequence. Clicking on unmarked words in the text, or pressing an arrow key, might shuttle readers from middle, to beginning, to end, to middle, from Borges's text to my own with no external cues to mark shifts in voice.)

Douglas's students, unused to the medium, were initially stymied by this complicated linking structure. In their commentaries on the readers' preliminary reaction to the text, both Douglas (2000) and Moulthrop (1991) note that the general confusion resulted at least in part because the class did not have access to the reading instructions Moulthrop meant to accompany the text; but even having discovered various ways of navigating, they remained nonplussed because of the seemingly nonsensical nature of the narrative:

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[4] Douglas first published this study in 1992 under the title "Gaps, Maps and Perception: What hypertext readers (don't) do." A revised version of this essay, like much of her writing on hypertext from the last decade, is included in her book, Jane Yellowlees Douglas (2000), *The End of Books—Or Books Without End?* Ann Arbor: The University of Michigan Press. Where two versions exist, I have cited Douglas's work from the more recent source.

> Confused by a multiplicity of narrative strands in which they could encounter a character dead in one place and very much alive and ambulatory in the next, the readers of "Forking Paths" drifted through the hypertext without any tangible sense of a macrostructure that could confer significance on the elements they encountered in any given narrative segment. Only by using their sense of the narrative as a virtual yet tangible structure could any of the readers arrive at a sense of the relationship between individual narrative places and their relations to the hypertext as a whole. (Douglas, 2000, p. 76)

It is apparent that the narrative inconsistency about which the students complained is a feature of "Forking Paths" that exists irrespective of which linking mechanism (embedded links or arrow keys) readers use to navigate. It is also apparent that play and performance are not particularly good metaphors for these readers' experiences. In his own explanation of their reading processes, Moulthrop (1991) suggests, instead, that they engaged in an interesting inversion of the reading process as described by Peter Brooks (1984): rather than reading for plot, they plotted their readings.

Moulthrop's (1991) original intention in creating "Forking Paths" was to invite readers to collaborate with him—and, indeed, with Borges—in authoring the text. He quite literally razed the story in order that readers might raise it, thereby making explicit the topographical metaphor of text as ruin and, supposedly, obliging readers to "assume the mantle of authorship" (p. 126). Yet in spite of this original intent, and in spite of the seeming agency the act of plotting their readings entailed, the reality of the situation is that "Forking Paths" fell short of Moulthrop's mark, and not merely because the reading instructions were missing from Douglas's copy. His metaphor of hypertext as a "cartographic space" (1991, p. 128) still supposes, after all, that readers attempt to construct a duplicate of a pre-existing and fixed structure; for clearly the science of cartography does not entail the sketching of inconstant dream worlds for personal edification. As Douglas (2000) observes,

> Although they could not see the map of "Forking Paths" while they were reading, they knew that its segments were like points

> on a map, as they could visit them by using directional tools. Since they had no clear idea of what the map looked like, their explorations were as much about getting a sense of the layout of the text and a map of narrative possibilities as they were about the placement and contents of any one segment within it. (p. 78)

The readers of *Forking Paths* appear, therefore, to have envisioned themselves as detectives whose chief purpose it was to uncover the hidden structure of the text.

Hypertext reading according to this view becomes a strangely paradoxical experience: readers are placed in a Faustian predicament, seemingly free to build the text according to their respective fancies, but aware perhaps only at the last that the presence of choice is an illusory one, for the text, replete with its multiple pathways, is nevertheless still very much a controlled space. Evidently links are not programmed at random; rather, their presence and their direction is as integral to the artistry of the work as is the content. Harpold's (1994) description of *afternoon*'s pathways shows how calculating the linking process can be:

> The list of paths displayed by clicking on the Browse button is less informative than it might at first appear, as only the names of paths and the lexias they connect are listed. These are often cryptic or repetitive and seldom suggest much about the content of the target lexia. Words within lexias that lead to other lexias . . . are not identified by any distinguishing style or symbol. There may be more than one such word in a lexia, and different yield words in the same lexia sometimes lead to only one target lexia. In some cases, where a yield word leads depends on the sequence of lexias that have previously been visited. The text makes heavy use of Storyspace's "guard" function, which places hidden restrictions on the reader's movements, making it impossible to visit some lexias until a specified sequence of other lexias has been followed. (p. 192)

It would seem the sort of empowerment of the reader that Landow (1997) describes in his discussion of his own students using an informational hypertext system at Brown University is not necessarily a feature of literary hypertext. On the contrary, in reading Harpold's description, we are reminded of the words of Mephistophilis to Faustus: "When thou tookest the book/ To view the scriptures, then I turned the leaves/ And led thine eye" (*Doctor Faustus* V.ii.89-91).[5]

To return to the first question, then, although several theorists have attempted to describe how the roles of writers and readers of literary hypertext may be different from those of writers and readers of literature in print, there is little empirical evidence to substantiate such theories. To truly elucidate the question of how writers' and readers' roles are changing, more research with actual readers would be required, but given that hypertext theorists tend to dismiss or ignore existing empirical studies, and seem reluctant to engage in research with readers themselves, the question—particularly as it relates to literary reading—has seldom been taken beyond a hypothetical level.

ii. A means to an end? Reading for closure in hyperfiction

A second point of deliberation in theoretical discussions of hypertext concerns the importance of closure as an experiential aspect of response to literature. As hypertext theorists have pointed out (cf. Douglas, 2000, p. 91), traditional understandings of structure in dramatic and narrative text derive from Aristotle (trans. 1982), who observed that "proper," or "whole" texts must have "a beginning, a middle, and an end" according to the following definition:

> A beginning is that which does not come necessarily after something else, but after which it is natural for another thing to exist or come to be. An end, on the contrary, is that which naturally comes after something else, either as its necessary sequel or as its usual [and hence probable] sequel, but itself has

[5] The question of control is also an issue for designers of interactive video games, which are, as Bolter has noted, a cousin of literary hypertext. In musing about how designers might arrive at the optimal balance between "creating open-ended game environments and utterly bewildering the players," Johnson (2001) observes: "the narrative impulse is alive and well in the video game world, but it is struggling with its interface conventions. Stories imply a sequence, and so the question becomes: 'How do you usher players through a sequence of events without putting them on a rail'" (¶ 5)?

> nothing after it. A middle is that which both comes after something else and has another thing following it. A well-constructed plot, therefore, will neither begin at some chance point nor end at some chance point, but will observe the principles here stated. (p. 52)

This view of plot structure continues to dominate our thinking even in spite of the fact that many modern narratives do not reflect these qualities at all. Aristotelian understandings of structure are still taught widely in the school system in the context of both drama and fiction, classical and otherwise. The handbook used heavily by many of Ellen's teaching colleagues (Holman, 1936/1978), for instance, defines dramatic structure according to Frytag's Pyramid, which, building on Aristotle's notions, diagrams plot as a series of causally related incidents occurring along the top line of a pyramid, commencing with the "inciting moment" and ending with "the moment of last suspense" (p. 236). As Ellen notes, this diagram is commonly appropriated for use in teaching short story structure as well. One of the most popular short fiction anthologies used in Canadian high schools, *Story and Structure* (Perrine, 1987), also echoes Aristotle. Perrine claims, "artistic unity is essential to a good plot":

> There must be nothing in the story which is irrelevant, which does not contribute to the total meaning, nothing which is there only for its own sake or its own excitement . . . The incidents and episodes should be placed in the most effective order . . . linked together in a chain of cause-and-effect. (p. 50)

In such a "good" story, he concludes, "one seldom feels that events might as easily have taken one turn as another. One does not feel that the author is managing the plot, but rather that the plot has a quality of inevitability, given a certain set of characters and an initial situation" (p. 50).

Of course, as Douglas (2000) points out, the notion that there exists a "most effective order," some genuine arrangement of events that surpasses all other arrangements, is debatable (p. 71). Writers of virtually any genre will observe that the ordering of parts is often open to question, and that arriving at a final sequence, while an extremely important aspect of the writing process, often entails compromise (cf. Hodgins,

1993). Further, when viewed in light of the stories that young people encounter most frequently—namely, those they watch on television—the irony in teaching classical notions of structure founded on observations of Greek tragedy becomes increasingly evident. According to a survey conducted by Statistics Canada in the fall of 1999, young Canadian television viewers (aged 2 to 12 and aged 13 to 17) watch an average of 15.5 hours of television per week. The findings of this survey also reveal that viewers spend 42% of this time watching serial comedies and dramas.[6] We may therefore surmise that in a given evening young television viewers are very likely to watch consecutively, interrupted by advertisements, several twenty to forty minute serial programmes that fall into a category of drama that Aristotle (trans., 1982) deems "defective," the episodic:

> Among plots and actions of the simple type, the episodic form is the worst. I call episodic a plot in which the episodes follow one another in no probable or inevitable sequence. Plots of this kind are constructed by bad poets on their own account, and by good poets on account of the actors; since they are composing entries for a competitive exhibition, they stretch the plot beyond what it can bear and are often compelled, therefore, to dislocate the natural order. (p. 55)

Interestingly, Aristotle seems to have described the current economy of television quite well here: successful screenwriters, after all, must create competitive showpieces that please both the players and the viewers. To this end, they necessarily operate on principles of multiplicity and open-endedness; for in order to compete in a saturated market, serial television programmes must be varied enough in content to please a wide viewing audience and must remain open to infinite possibilities that may play out over several years.[7] The popularity of such programmes suggests that closure may not be an

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[6] This number, 42%, is specified for Anglophone Canadians two years of age and older. The figure is slightly lower, 38%, for Francophones. It is likely that the percentage of time young people view comedy and drama is in fact higher than this figure suggests given that they are less inclined to watch the news and documentary programmes that comprise 24% of the total Anglophone viewing time.

[7] I should also note here that "episodic" is an apt descriptor for many literary hypertexts that, apart from being open-ended, also knit diverse narratives and genres. Readers of Stuart Moulthrop's (1997) *Hegirascope*, for example, randomly encounter nodes containing poetry, essay, narrative, correspondence, and dialogue. There is no logical order, and it is not possible for readers to choose to follow one series of nodes (for example, the dialogue) above others. The television equivalent of this hypertext would be a network with no guide and random daily time slots for its various programmes.

essential feature of story, and that a yearning for closure is not necessarily something that young people, who are generally exposed to television before they learn to read, come to written text expecting in the first instance.[8]

Upon examining print text it becomes apparent that closure in the classical sense is not an essential feature of successful narrative in this medium either. Recall Bolter's (1991a) contention, discussed earlier in this chapter, that literary hypertext springs naturally from the experimental writings of authors like Borges. In examining some of the pieces in the *Ficciones*, we may see that the Aristotelian notion of ending is one of the conventions with which such authors were experimenting. Consider, by way of example, our now-familiar narrative. The final paragraph of "The Circular Ruins," as I have already noted, is in fact its beginning: "For what had happened many centuries before was repeating itself. The ruins of the sanctuary of the god of Fire were destroyed by fire" (Borges, 1981, p. 127). To contemplate the implication of this so-called ending, we must repeat the story, in reality or in reflection. Had Borges been writing music, he might have directed his readers *da capo*. And certainly it is not difficult to find other works in print that are repetitive or inconclusive. Samuel Johnson's *Rasselas*, for instance, ends with "The conclusion, in which nothing is concluded" (p. 188) and Sterne, of course, would be hard put to conclude the tale he avoided beginning in the first instance. Instead, he "ends" *Tristram Shandy* by poking fun at the nonsensical nature of a story that refused to be:

> "L—d! said my mother, what is all this story about?"
>
> "A COCK and a BULL," said Yorick—"And one of the best of its kind, I ever heard." (p. 615)

Why, then, make problematic the question of closure at all? It would seem, given the open-endedness of television and of less traditional writings in print, that the extended flexibility of hypertext in this same regard would not be a particularly difficult feature of the medium for readers to become accustomed to. Readers, it would seem, are already accustomed to arriving at closure of their own accords even in very open-ended works.

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[8] Having said this, however, it is also possible to distinguish between episode-level and series-level closure. Much current television programming is not unlike the serialised writings of authors like Conan Doyle and Agatha Christie, wherein each instalment presents—and closes—a particular conflict without eliminating the possibility of the protagonist's involvement in further adventures. Therefore, while television may challenge the notion of closure on one level, it clearly reinforces it on another.

And yet, as Douglas (2000) observes, the concept of what constitutes closure is further complicated in the electronic medium, and does pose different challenges for readers:

> Closure in stories, novels, films, and television series, even when it is left open to future episodes or sequels, is always determined by authors, screenwriters, directors, and producers . . . But, if readers realize they are dealing with possibilities and versions, rather than events that are immutable and determined, they also need to account for why they finished their readings. (p. 82)

In this view, closure is defined in terms of interactivity: print texts are "closed" because no matter how many possibilities they allude to, they generally offer only one; hypertexts are open because they offer multiple possibilities and invite readers to partake in the author-like or producer-like game of sequencing scenes and determining the physical ending of the text. This last entails more than simply turning off the television or putting down a book when we have had enough (a scenario in which we abdicate our responsibility as readers on the assumption that the text is no longer worth viewing or watching); it involves, according to Douglas, "strong" reading by "inner-directed" readers who are "distinguished by their ability to redefine their roles as readers either through discovering a new way of navigating through narrative space or by revising the concept of closure" (p. 87). Such readers, she continues, are those who are willing to persevere until such time as they have managed to resolve narrative tensions by minimizing ambiguity and by incorporating "as many of the narrative elements as possible into a coherent pattern" (p. 122). In short, such readers are mature enough to dispense with the idea that closure is always determined by the author.

Douglas, as we have seen, is distinguished among hypertext theorists in that she gives serious consideration, involving observations of actual readers, to the processes at work in reading multi-sequential fiction. Her studies and her reflections on them are thought-provoking in many respects; and yet, they are also troublesome because, in the final analysis, her theory of hypertext reading implies that readers who fail to connect with literary hypertext do so because they are *not* strong readers. From what we can glean of her students' responses from her own writings, we find that most of the seven readers

she gave "Forking Paths" were frustrated with the narrative (Douglas, 2000, pp. 80-81). Only one, through "serendipity, or cheerful perseverance" (p. 81), managed to find some relationship between his mental map of the text and the actual content. And yet, the response of this happy-go-lucky reader, along with two of his classmates who read the print version "resistantly" (p. 84), fuels her argument that responsibility for reader breakdown in the network of "Forking Paths" lay not with the text's inventor, but with the readers themselves who, being "other-directed" by their "knowledge of established reading practices and literary conventions," prematurely *branded* the text failed (p. 87).

Her decision to sort readers in two categories, strong (inner-directed) and weak (other-directed) is problematic for those who have spent much time teaching and studying reading processes.[9] Are we to assume that there were no strong readers among the six students who became frustrated with the hypertext? Is it not possible that some of her readers were both strong *and* other-directed?[10] For that matter, are all readers not other-directed in that they necessarily take their cues for reading from their previous experiences with text and from their existing knowledge of literary conventions? Ultimately, is the distinction between other- and inner-directed readers in fact a valid one? Certainly labelling students in this manner smacks of reductionism in that it fails to acknowledge the many styles of reading we might see in even a single class. I do not wish to dismiss Douglas's writings—her work is important and gives us many clues as to how reading may change in the electronic environment; nevertheless, her theory of hypertext reading seems to be founded on what amounts to *dis*-appropriation of voice: she dismisses the valid reactions of the vast majority of her class in order to build a case based primarily on the responses of those she has characterized as exceptional readers, a questionable methodology at best.

Unfortunately, Douglas (2000) appears to follow a similar process in arriving at the understanding that multiple plausibility is an adequate replacement for closure in

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[9] Douglas does not use the term weak, but the antithesis of strong is nevertheless inferred, particularly in the context of her later action of labelling "two different kinds of readers" (p. 87).

[10] I am reminded here of Sven Birkerts's (1994) response to *Victory Garden*—should we surmise that he is not a strong reader because, having spent approximately the same time with a literary hypertext as did Douglas's students, he branded it failed? Moreover, if Douglas (2000) is willing to criticise Birkerts for making an assessment of the medium based on "little more than an hour spent with a single text" (p. 3), how can she in all conscience build theories based primarily on the observations of a single "strong" reader whose exposure to hypertext was identical to his?

hypertext. In this case, she assigns herself the role of strong, inner-directed reader in recounting her detailed interaction with two hypertexts, *afternoon* and *WOE*. In like manner to what she perceives her strong student readers were doing, she reaches a satisfying sense of closure because (she says) she is willing to revise her understanding of ending. In the case of *afternoon*, she keys on a node that appears to be the "basement" of the text (p. 106). In the case of *WOE*, she concludes her reading when she has arrived at an interpretation that accounts for "most" of the nodes (p. 119). She surmises:

> If we as readers truly do long for a sense of an ending as the starving long for loaves and fishes, it is not the definitive, deathlike ending foreseen by Benjamin: a plausible version or versions of the story among its multitudinous possibilities will suffice equally as well. (p. 122)

But if, as Joyce (1995) asserts, closure is a suspect quality, then surely this conclusion of Douglas's might also come under suspicion. Significantly, Douglas puts the above hypothesis following the sort of compulsive reading that is the hallmark of academia. Her analysis of these texts clearly involved an enormous amount of time and expertise. In fact, Harpold (1994) reports that she has spent *years* reading and re-reading *afternoon*, and quite possibly knows it "better than its author" (p. 211). One wonders whether competent readers who are not experts in the field of literary criticism would find the "plausible" conclusions of which she speaks satisfactory.

Critics like Platt (1994) would say not, arguing, instead, that hypertext's multiplicity and interactivity is the reason it will fail as a vehicle for literary text. To support this claim, he points to the failure of print versions of multi-sequential narrative such as the children's book series, "Choose Your Own Adventure."[11] He also notes that the flagging of the print version of multi-sequential narrative is not an isolated incident. Other attempts at marketing interactive fiction to general audiences have also met with failure or a cool response: in test-runs of interactive television systems, Platt observes,

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[11] As the title suggests, this series requires that readers choose between various plots. The series enjoyed popularity in the late part of the twentieth century, but has recently become less fashionable. On the face of things, it appears there may be a connection between the demise of the genre and the emergence of CD-ROMs that invite children to engage in text-based adventure games in the electronic space, but Platt does not take up this possibility.

"most families didn't actually bother to talk back or otherwise interact with their programming" (p. 3). Similarly, Bolter's (1996) comments about the limited audience of landmark hyperfictions such as *afternoon* and *Victory Garden* point to the failure of literary hypertext to attract a significant reading public since its genesis:

> Such hypertext fictions as *afternoon* (Joyce, 1987) and *Victory Garden* (Moulthrop, 1992), written exclusively for presentation on the computer, have . . . won small audiences. Ms. Proulx may be right [in saying that "no one is going to read a novel on a twitchy little screen"], if we take her to mean that there will never be a substantial audience for verbal fiction and non-fiction in the new medium. (p. 256)

While the slow rise of the genre is in this instance blamed primarily on technical issues (a twitchy little screen), we might infer from discussions of reader response that the indeterminacy of highly networked hyperfiction also plays a role in limiting audience.

To this end, Platt argues that general audiences will continue to prefer what they have always preferred, engaging story. This desire, he says, is reflected even in conversation, a large portion of which is anecdotal:

> A good anecdote (like a good short story) seems real, contains interesting characters, describes an event which is unusual, and has a payoff at the end. A good anecdote is also linear; we tend to get annoyed with people who can't tell the story in a sensible sequence . . .
>
> True, there are storytellers who have taken their art beyond the simple level that I am describing. Certain forms of "literary" fiction can create pleasure on a far more intellectual, less visceral level. Interest in this fiction, however, is not widely shared, and likewise, I believe the appeal of serious hypertext fiction will be similarly limited. (p. 3)

His musings are frank—some might even say naïve. He appears to uphold an uncritical, story-driven form of reading and to brush aside important experimental or philosophical literary texts in a way that would make any serious student or teacher of literature

uncomfortable. And yet, his voice is welcome here because it reminds us that there are many sorts of readers with many different motivations in reading literature, not the least of which is pleasure. They do not come to literary text, or to film, for that matter, with the expectation of being enslaved by linearity, or pinned down by closure; they come with openness, trusting that the text will prove a catalyst for their own imaginings. It is not for academics to diminish this activity, or to dismiss readers as unsophisticated if they do not flourish in the new-age textual laboratory. Literature is not merely a means to a theoretical end. It is, rather, for us to examine hypertext carefully through the eyes of readers of all sorts, and to consider the ways in which it may facilitate, impede, or extend reading processes.

iii. Mind the gap: Experiencing the link

To begin this discussion about experiencing links, the last of the issues I wish to address in this section on hypertext theory and the question of reading, I would like to reflect on a passage from Bakhtin's essay, "Questions of literature and aesthetics," as translated by Holquist and Emerson (1981):

> Languages of heteroglossia, like mirrors that face each other, each reflecting in its own way a piece, a tiny corner of the world, force us to guess at and grasp for a world behind their mutually reflecting aspects that is broader, more multi-leveled, containing more and varied horizons than would be available to a single language or a single mirror. (pp. 414-415)

Hypertext theorists (e.g., Landow, 1997, p. 36 and Snyder, 1996, p. 78) have applied Bakhtin's notion of heteroglossia to the new medium for a number of reasons. With its diverse pathways and unlimited connections, hypertext (they say) makes explicit the ideas of plurality, coexistence, interaction, and so on, described in Bakhtin's writing on Dostoevsky's novels because it allows a multitude of texts to reside in a space where voices intersect and interact and are not, supposedly, subjugated to a final, hegemonic discourse. I have not cited Bakhtin, however, in order to take up these ideas at length, or to problematize the politics of the dialogic space of the Web in the light of his

philosophy;[12] rather, I wish to examine the image he conjures of the reader in the context of how the presence of links in a literary text may modify the reading experience.

In speaking of print text, Bakhtin (trans., 1981) suggests that the way in which mirrors of language reflect different viewpoints—partially, suggestively, not overtly—forces us to "guess at and grasp for a world behind their mutually reflecting aspects."[13] In the process of reading we are invited to open out our understandings, to think beyond the page, and the degree to which we do so will invariably depend on how willing we are to engage in the activity of reflecting on the reflected world. This description is reminiscent of Iser's understanding of the process of reading cited earlier (see page 34), and also provides an interesting viewpoint on the experience of choosing between links. Let us take a moment to map the mirror metaphor onto literary hypertext. In this understanding, individual reading units, or nodes, become like panels of reflective glass, each showing a "tiny corner of the world"; and the literal method by which we may pass behind the mirror is the link, the electronic worm-hole that shuttles readers forward or backward or sideways through the three-dimensional space of the new medium. In literary hypertext, the imaginative act of *reaching beyond* is thus made explicit, for, having perused a given node, readers are required to pause and to project their imaginings in the process of choosing a link.

Joyce (1995) refers to links as "words that yield" (p. 185), a definition that underlines their central role in hyperfiction: links are literally the passwords of the

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[12] Clearly this might be done. The assumption that the web is without a hegemonic voice is naive; commerce is that voice, and its strong influence is reflected in the emerging rhetoric of the web as well as in the design of individual pages, whether they be personal, academic, governmental, or otherwise. My own study (with Maureen Kendrick) of young children's web design in comparison with their drawing, for example, shows this plainly (Kendrick & Dobson, 2001).

[13] Craig Brandist, professor in the Department of Russian and Slavonic Studies, Sheffield University, observes that the Holquist and Emerson translation is "rather inaccurate in general" and in his own translations therefore attempts to "reproduce the original as closely as possible even if it does read rather inelegantly" (personal communication, February 5, 2001). His translation of the same passage differs slightly from Emerson's and Holquist's, and is worth noting:

> Languages of heteroglossia, like mirrors that face each other, each of which in its own way reflects a little piece, a tiny corner of the world, force us to guess at and grasp behind their inter-reflecting aspects for a world that is broader, more multi-levelled and multi-horizoned than would be available to one language, one mirror. (*Voprosy literatury I estetike*, [C. Brandist, trans], pp. 225-260)

In the context of this paper, the adjective "inter-reflecting" is more appropriate than "mutually-reflecting" because the prefix "inter" holds the sense "between," and therefore reminds us of the spaces, or gaps—the in-betweens—that populate all texts, electronic and otherwise.

document. And, true to the spirit of passwords (words that permit access to secret spaces), they are often as elusive as Bahktin's space behind the mirror, as Douglas (2000) observes:

> Hypertextual links or connections, of course, bridge the very physical gaps yawning between segments of text separated by virtual, three-dimensional space. Yet the links have no textual content themselves, and few cues that might prompt readers to see them as anything but merely physical connections between two segments of text. (p. 66)

Choosing between links, therefore, can be a simultaneously exhilarating and disconcerting experience. To use Bahktin's language, we are *forced* into activity, into a *guessing at* or *grasping for*—similar, in some respects, to the childhood experience of whispering a password to the guard of the neighbourhood fort. Whether crawlspace, attic, or tree house, the state of affairs is generally the same; in the moment of utterance, the child who voices the word for the first time might be filled with a sense of combined excitement and anxiety: "Is this the right word? Will they *really* let me in? And if they do, will I find what it is that I am hoping to find?"

How might such an experience modify response to literature? Dobrin (1994) suggests that the uncertainty of the linking moment is the problem with hypertext structure, the reason that it does not work well as a vehicle for text. All too often we do not find what it is we had hoped to find when we choose a link: "The author's conception of the connection's relevance is not the reader's, and the reader gets lost" (p. 310). But as any skilled reader of literary text knows full well, imaginative authors link seemingly disparate textual scenes all the time in print through flashbacks, dream sequences, the juxtapositioning of parallel scenes, and so on. Consider Bakhtin's view, written well in advance of the age of the personal computer, on what he terms "linking" in Dostoevsky's novels:

> Ordinary pragmatic links at the level of the plot . . . are insufficient in Dostoevsky's world . . . [because] such links bind and combine finalized images of people in the unity of a monologically perceived and understood world . . . The

> ultimate clamps that hold his novelistic world together are a different sort entirely . . . [The] stubborn urge to see everything as coexisting . . . leads Dostoevsky to dramatize, in space, even internal contradictions and internal stages in the development of a single person—forcing a character to converse with his own double, with the devil, with his alter ego, with his own caricature . . . (Bakhtin, 1994, pp. 89, 90-91)

We are, argues Douglas (2000), wholly capable of bridging such gaps in narrative, in film, in speech: "The reason why we so seldom glimpse these gaps—except in student writing, perhaps, or in our own writings in progress—is largely a function of human perception and only secondarily of literary convention" (p. 67).

Nevertheless, as we have seen, when Douglas gave her students the hypertext adaptation of Borges' "The Garden of Forking Paths," they most often did not see connections. Perhaps this was because the combined temporal and spatial rift of the linking moment drew readers' attention to transitions they might have ignored in another medium such as film, which has a sort of seamlessness because the "joins" are generally imperceptibly swift. In a commentary on how greatly delays of merely a fraction of a second can disrupt telecommunication, for example, Cochrane (1995) describes the difficulty present-day hypertext readers might face in this regard:

> The generic problem is having to wait for a period that is too short to do anything else, but long enough to break our concentration. Delays of a fraction of a second can disrupt our mental agility and interactive creativity to an alarming degree . . . For us to enjoy natural, and effective communication with people and machines, in real or virtual worlds, the need is for sensory delays of less than 100 [milliseconds]." (¶ 1-2) [14]

The added variable of perceived choice further complicates the linking moment. How do readers choose between multiple links in a node given the paucity of narrative information that might guide their selections? And how does their uncertainty over where

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[14] Of course, this is likely a temporary problem reflective of the infancy of the technology; nevertheless, given that our experience of hypertext is necessarily grounded in the present, it bears mentioning here.

each link might lead temper their response to the text? To return to the notion of passwords, and the predicament of the one who stands at the door, the hesitation of the text in some ways parallels the hesitation of the reader. The temporal rift is a reflective moment, a predictive moment—it is a moment in which to consider what might have been and what might be. In this sense, hypertext links evoke a very different response than do the narrative links in print texts. Expressed in terms of Bakhtin's text-as-mirror metaphor, when we reach to discover what is *behind* the looking glass, we cease to look at what is reflected *in* that glass; instead, our attention is by necessity drawn to edges, to what we must reach around, to *structure* rather than *content*.

Perhaps examining the role of cuts in film will serve to elucidate this point. It is often said that the art of cinema lies in the cut, and anyone who has watched the editing process of raw footage will know the undeniable veracity of this statement. Holding the frame of Cordelia's face for an agonising moment as she comes to comprehend her disownment, flashing to an astonished Kent, to a gloating Regan, and then to a furious and yet somehow bewildered Lear, displays in an instant the panorama of emotion in the first scene of *King Lear*, and sets the so-called celluloid stage for the action to come. Yet, how often do we attend to cuts in viewing film or television; or, more importantly, what would happen to our perception of the same scene were we called to attend to these cuts? In a pilot CD-Rom developed by Goodman (1996) for an undergraduate Shakespeare course, the Open University/BBC includes a sequence that asks students to do just this—to plot along a line the number of cuts in a two-minute film clip. The exercise requires that students view the scene as might a cinematographer. In doing so, they shift their gazes from content to structure, and they are suddenly made aware of the thread that binds the whole. Some find the experience startling, for with the knowledge of macrostructure comes an awareness of the heretofore invisible hand of the editor, and of how that hand directs the viewer's gaze as surely as if it were set firmly upon the crown of her head. To be sure, elongating the near-instantaneous spaces of the cuts in the film segment would achieve the same effect as does the Open University exercise: it would draw the viewer's attention, at least in part, from content to medium.

Links, it would seem, may function in a similar way, forcing readers' attention to structure and away from matter. This is where the incongruity between Bakhtin's reader

and the hypertext reader becomes plain. In Bakhtin's view of Dostoevsky's "non-pragmatic" linking, it is the *carefully crafted* juxtapositioning of multiple voices and ideas that prompts readers to enlarge their individual spheres of understanding. Readers must reach personally and intellectually because a knowing hand has placed mirrors of language so as to reflect incongruous images. But when the mirrors appear randomly placed, when readers are literally forced to "guess" and "grasp" at the world behind the word that yields, when their attention is diverted to the problem of determining structure—do they still continue to reach personally and intellectually after the fashion of Bakhtin's reader?

Throng-noise

In asking this question, I have returned, Borges-like, to the problem that prompted this discussion of issues in hypertext theory and reading: "if [hypertext] does indeed push the metaphor of text as ruin a little further—if, in its fragmentary nature, it leaves more "room" for the reader—might it not facilitate the process of self-conceptualisation better than does print text?" I confess, I have no answer to this question at the present; rather, like the dreamer, I have revisited my point of departure only to set about my purpose again. For in truth, examining theoretical writings on reading hypertext is in itself an exercise in reading a ruin: to do so is to explore an enthralling but vacant place, a place begging to be peopled with readers who might fill it with much throng-noise, and whose many voices might build our understanding of how they experience the texts they inhabit.

What goes on behind the screen? Empirical research on hypertext reading

In "Revisiting the circular ruins," Ellen and Curt are both, in their different ways, intimidated by Aaron, a talented student who (as his name suggests) speaks powerfully in a language with which his teachers feel uncomfortable.[1] While Ellen is uncertain about technology but nevertheless willing to explore the possibilities it offers, Curt is less optimistic about "what goes on behind the screen." He questions Aaron's seemingly erratic method of study and proposes that the computer further disrupts the student's already limited concentration, that it encourages him to jump indiscriminately from "thing to thing," even that it is adversely affecting his cognitive development. Indeed, he takes the argument a level further in suggesting that the human mind in general is atrophying in the information age. Curt's concerns are similar to those voiced by prominent critics of computer technology such as Postman (1992), who suggests that television and computer-based media are attacking print-based media in a struggle for control over student minds:

> On the one hand, there is the world of the printed word with its emphasis on logic, sequence, history, exposition, objectivity, detachment, and discipline. On the other, there is the world of television with its emphasis on imagery, narrative, presentness, simultaneity, intimacy, immediate gratification, and quick emotional response. Children come to school having been deeply conditioned by the biases of television. There, they

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[1] In Christian mythology, Moses is called to speak on behalf of his God, but protests, "I am not eloquent . . . but I am slow of speech, and of a slow tongue" (Exodus 4:10; King James Version). His brother Aaron, who is a good orator, is therefore called to speak the word of God to the children of Israel. The name Aaron is consequently understood in Judeo-Christian culture to mean speaker or teacher. I should stipulate that it is not my intent, in making this allusion, to set up a broader parallel with the Biblical story (i.e., to deify technology, or, for that matter, the administrative bodies that promote technology); I merely wish to introduce the notion of student as teacher, a topic to which I will return in Part IV.

> encounter the world of the printed word. A sort of psychic battle takes place, and there are many casualties—children who can't learn to read or won't, children who cannot organize their thought into logical structure even in a simple paragraph, children who cannot attend to lectures or oral explanations for more than a few minutes at a time. (pp. 16-17)

The scenario Postman describes here sounds very similar to what Giroux (1995) has termed the *Disneyfication* of human culture. In a world controlled by giant entertainment corporations, information is fragmented into manageable bits that do not disrupt the flow of entrepreneurship, a process to which Curt alludes in his evaluation of Disney's Epcot Centre. When we factor personal computers into this scenario, the outlook, according to Postman and those who share his position (i.e., Birkerts, 1994), is grim: surely computers will only magnify the learning problems introduced by television by further eroding attention span. And hypertext, it would seem, is at the heart of the computer problem; it is the Trojan horse of those warring on the side of media. In the early days of the web it infiltrated the lines of print *incognito*—a friendly interloper with an experimental bent: *print* adaptation, hyper*fiction*, docu*verse*. But increasingly it looks like television, and its fragmentary nature seems perfectly suited to the commercial agenda of the entertainment industry.

This, of course, is a sceptic's view of how computers are poised to change literacy, born of those who have heard the *carrion* call for the grand tradition of literature. The apocalyptic position of critics such as Birkerts (1994)—who even goes so far as to say that "we are poised at the brink of what may prove to be a kind of species mutation" (p. 31)—is extreme; and yet, regardless of whether we agree or disagree with such commentators, at least one of the questions they ask is certainly deserving of serious attention from English educators: namely, how are computers, and specifically the structures they allow for the representation of text, changing reading and writing? In the last chapter I considered this question largely on a theoretical level. What follows here is an examination of the question through the lens of empirical research with actual readers of hypertext.

Learning to read—again

As teachers of literature at the secondary level and beyond in Canada, we generally expect, except in unusual cases, that our students come to the classroom well prepared to approach print media. We expect that they can follow transitions from one paragraph to another, that they understand the basic features of a book, such as the table of contents and the index, and that they know how to move between these features to locate information.[2] But to engage with hypertext—informational or literary—readers must in some ways relearn the process of approaching written language, an undertaking that, as we have seen with Douglas's students, is not necessarily easy. Early studies identify a number of ways in which highly networked hypertext might confound its reader. Foss (1989), for example, observes that the structural non-linearity of such documents often leaves readers with a "general feeling of disorientation, being lost, or of losing context" which is sometimes characterised by a lingering sense that something important is being missed (p. 407). "Other problems that 'lost' or 'disoriented' users have," she continues, are as follows:

> arriving at a particular point in a document and then forgetting what was to be done there; neglecting to either return from digressions or to pursue digressions that were planned earlier; not knowing if there are any other relevant frames in the document; forgetting which sections have been visited or altered; and, finally, difficulty summarising which frames have been examined or changed after hours of browsing. (p. 407)

Foss characterises two primary scenarios: the "embedded digression problem" and the "art museum phenomenon" (p. 408). The first, as the name suggests, comes of following increasingly digressive links to the point that the original task is forgotten; this, and like problems, are attributed to task overload that results from the number of distracters

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[2] This statement may be considered contentious by some secondary teachers; the integration of special needs students, grade advancement on the basis of age rather than of academic achievement, and the increasing turn toward heterogeneous achievement groupings are some policies which have made it more difficult for teachers to predict student reading levels in the secondary school setting. However, on the basis of Alberta Education (1997a; 1997b) statistics, which show that 95.5% of English 30 students and 91.5% of English 33 students achieved the acceptable provincial standard, I would contest that the statement is generally true of students in non-remedial English language arts classes in the province of Alberta, and that Alberta achievement levels are generally reflective of Canadian achievement levels.

inherent in a multi-sequential document. The second scenario, "art museum phenomenon," also entails a form of cognitive overload that leads to an inability to process and to store the information encountered in a browsing session.[3] Ultimately, however, Foss postulates that trouble locating information, difficulties with remembering, consolidating, and understanding the semantic content of nodes, as well as general disorientation stem from inexperience with learning from browsing and from reader unfamiliarity with hypertext structure and conceptual organisation. In other words, with increased exposure to such text structures, reader difficulties should be attenuated.

Her hunch is supported by the results of a subsequent study of students working with an electronic Sherlock Holmes encyclopaedia. Leventhal, Teasley, Instone, Rohlman, and Farhat (1993) noted a significant decrease in navigation problems toward the end of the last trial of their study, by which time readers were becoming accustomed to the hypertext environment. The students, who initially tended toward the use of hierarchical searching systems, and who "looped" about the system home card in what appeared to be an attempt at maintaining orientation, began to make increased use of network links as they became more familiar with the system (p. 160). In keeping with the tendency toward the use of landscape metaphors in hypertext discourse, the research group compares this behaviour to "learning the lie of the land." They suggest that Siegel and White's (1975) theory of spatial knowledge acquisition, cited below, might be applied metaphorically to the reading of hypertext:

> One locates oneself along a number of routes by a system of landmarks, these routes with termini become interrelated into a networklike assembly as a function of repeated experience, temporal integration, and sustained meaningfulness . . . Once routes with termini become interrelated into a networklike assembly, the gaps are gradually filled in . . . The landmark-connected-by-routes spatial representation becomes more gestalt-like. (p. 30)

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[3] Rouet and Levonen (1996) provide an overview of several studies, including Foss's, that provide evidence of disorientation problems in hypertext (ff. p. 15).

Evidently readers who are more experienced with the environment—or the "landscape," to subscribe to the above metaphor—will orient themselves within a hypertext differently than will novices. There may be some truth in this, but it is also likely that orienting to different hypertexts will always present more of a challenge to readers than does book technology:

> The physical structure of the printed book, given its familiarity, may give readers looking for information a better framework for a search or learning strategy. It is true that giving readers more familiarity with a particular hypertext allows them to use it more effectively over time, but differences in design principles between hypertexts make it less likely that learning will generalize from one hypertext to another. (Miall & Dobson, in press)

Foss's article is a good starting point for a discussion of empirical studies because, although it is dated by the standards of hypertext theorists, it details the sort of problems hypertext readers potentially face and also points to the chief difficulty with empirical research in this area: that is, because the medium is relatively new, we are still in a speculative phase. Those undertaking empirical research on hypertext reading at present by necessity recruit participants who have been taught to read by instructors well schooled in print constructs. Thus, regardless of how much experience young readers may have with multimedia, it is almost certain that they bring their knowledge of print conventions to bear on their reading of electronic texts, and that this applying of the principles of one medium to another may contribute to the difficulties some experience orienting to hypertext.

New strategies for a new medium

Having considered potential problems with hypertext, we might then consider what reading strategies the first generation of hypertext readers have developed. Astleitner and Leutner (1995) describe hypertext readers alternately as browsing, filtering, structuring, exploring, zooming, pathfinding, scanning, searching, and wandering (pp. 390-393). Their vocabulary is in keeping with a tendency to speak of

hypertexts in terms of topologies to be charted, and suggests that orientation—activities like structuring, exploring, and pathfinding—comprises a large degree of what hypertext readers do. Readers begin to show disorientation, according to Astleitner and Leutner, when their "exploring" becomes circular, or tentatively limited.

In an early study with hypertext readers, Mohageg (1992) documents a common reaction of disoriented newcomers to the medium: rather than making use of "home keys," which are often provided in informational hypertexts to speed return to a central searching device following completion of a task, his beginner users often "backed" out of the network, retracing the steps they took in the first place. This behaviour, it would seem, is one example of how readers apply print conventions to hypertext: when readers back through the network, after all, it suggests that they are attempting to stay on a structurally linear path. In this sense, the strategy is akin to slowly reversing out of a maze in order to keep track of one's position. Alternately, the tactic perhaps constitutes an effort to lend some sort of tangibility to what those new to the medium often deem a disconcertingly intangible space (i.e., whereas clicking on a home key renders invisible all through which the reader has just passed, backing through the network is like physically flipping pages to return to the table of contents).

Taylor and Self (1990) document a second, potentially more problematic strategy: in their study of readers using an informational hypertext on Greek mythology, they noted that their subjects either skimmed all nodes potentially related to their topics first and then returned to each as necessary, or read through each node thoroughly before opening another (p. 308). The first strategy, which the authors term "breadth-first" (as opposed to depth-first), is the red flag of those who deem hypertext to be the anti-Christ of Gutenberg (cf., Birkerts, 1994). What if "browsers" fail to return and actually *read* the nodes? Might breadth-first approaches undertaken in an attempt at orientation lead to poor reading strategies and decreased reading attention span? Curt posits that this is indeed the case, deeming Aaron's thinking "horizontal" after Frye's (1963) early

discussion of the possible effects on reading of the information explosion.[4] If we examine the celebratory rhetoric on the web, we find that his worries are perhaps not unfounded. *Beyond Cyberpunk: A Do-It-Yourself Guide to the Future* proudly displays what some fear is becoming the slogan of the new age reader: "Cyberpunk is endless skimming" (Branwyn & Sugarman, 1998, ¶ 4).

Reading different designs and structures

There is a tendency to use the term *hypertext* in an inclusive sense, to assume that the technology that enables access to electronic text is in fact a literary genre in and of itself. Of course, hypertext is no more a genre than the book might be considered a genre: both are technologies that facilitate access to information, but neither of necessity dictates the content and structure of that information (although certain genres may be more suited to one medium than the other). Since different designs and structures are bound to promote different reading strategies, I should take a moment here to outline some early attempts at identifying various patterns before commenting on what empirical research has to say about how readers respond to different forms.

Since its inception, two broad categories of hypertext have emerged: *pre-structured* and *self-navigating*. The first largely adheres to print-text conventions and can be distinguished by, for example, a table of contents and a set of ordered textual nodes (or, in some cases, a table of contents *and* the entire body of the document in a single node). These "print adaptations" are common to electronic journals or other academic web sites. While such designs are useful in that they expedite the processes used by readers in navigating similar print documents (i.e., flipping backward and forward within the text in an attempt to locate information specific to one's immediate research needs), they fail to explore the more innovative aspects of the medium.

"Self-navigating," or "networked" hypertexts, in contrast, demonstrate an attempt on the part of the author(s) to shake off print conventions by moving away from the

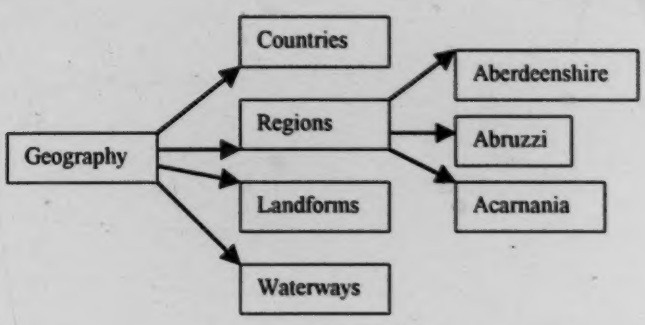
[4] Frye differentiates between "vertical" (deep) understanding and "horizontal" (broad) understanding. The literate members of an eighteenth century household possessing perhaps a copy of the *King James Bible* and one of the *Pilgrims' Progress* would come to have a so-called vertical understanding of these volumes through repeated readings and reflections over many years. As cost and accessibility ceased to be issues through the nineteenth and twentieth centuries, being "well read" came to mean having a much more superficial, or horizontal, knowledge of numerous books.

notion of a pre-conceived, logical, textual order and by giving over the reins of choice with respect to reading path(s). A number of attempts have been made at developing a taxonomy of nodes and links in these more innovative hypertexts. Gray and Sasha (1989), for example, define links according to the rhetorical function of the linked node, as follows: example, critique, counterargument, comparison, continuation (p. 328). Alternately, Gall and Hannafin (1994) offer a possible way of categorizing links according to their role in defining the overriding structure of the document, naming three varieties: hierarchical, conceptual and referential (p. 217; see Figure 1). All of Gall and Hannafin's linking structures are generally found in stand-alone electronic encyclopaedias, in which readers might browse through layers of sequentially subordinated nodes in researching a given topic. A typical hierarchical succession follows: subordinate to the node *geography* are *countries*, *regions*, *landforms*, *waterways*, and so on; subordinate to the node *regions* are *Aberdeenshire*, *Abruzzi*, *Acarnania*, and so on. Often linking possibilities in such networks are displayed through a series of cascading pull-down menus that map for readers the structure of the document each time they access the menu to choose a link. Individual nodes in the network normally contain "referential" links—those that are embedded in the body of the text and that connect to related, but not necessarily subordinate, material. For example, clicking on the word *cathedral* in the "Aberdeenshire" node might lead readers to a document providing information about the religious, political, and architectural importance of these buildings in Christian cultures; the word *religion* in this node might in turn link to a general commentary on world religions; this document might contain a link to Buddhism, and so on. Alternately, the "Aberdeenshire" node might contain only embedded "conceptual" links such as *economy*, *agriculture* and *religion*, enabling readers to move in a referential fashion within a limited network on the shire itself (see Figure 1). Hypertexts such as electronic encyclopaedias, which contain multiple linking structures, are thus hybrids that in some respects bridge the gap between pre-structured and self-navigating forms.

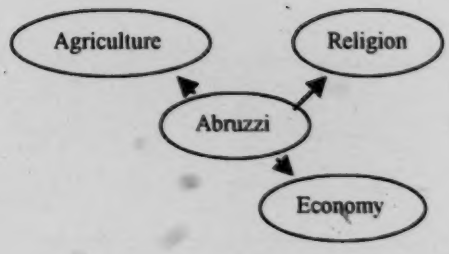
Notably, most attempts at outlining a taxonomy of hypertext structures find their basis in informational hypertext, perhaps because, as discussed earlier, this is the genre that reaches the widest audience and that therefore receives the most attention from

Figure 2.1: Gall and Hannafin's linking structures

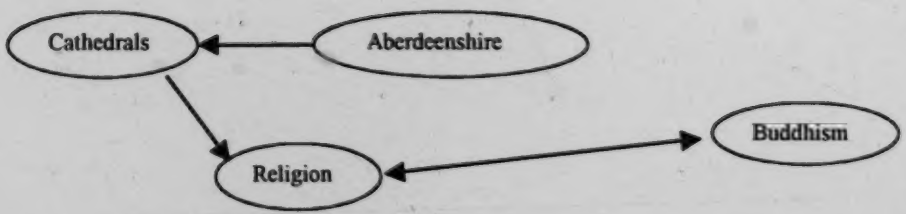
Hierarchical



Conceptual



Referential



researchers. Mark Bernstein (1998) is one theorist who has attempted a more comprehensive description of "patterns of linkage" in hypertext based on observation of both informational *and* literary hypertexts. As chief scientist at Eastgate Systems (www.eastgate.com), Bernstein is responsible for publishing many of the pioneering stand-alone literary hypertexts, including Michael Joyce's *afternoon* and Stuart Moulthrop's *Victory Garden*. On the basis of extensive observation of hypertexts such as these, as well as of web-based hypertexts, he suggests the following as a useful set of categories in helping us come to an understanding of the multiple patterns evident in large highly-networked documents: *Sieve*, *Tangle*, *Cycle*, *Split/Join*, *Counterpoint*, *Mirrorworld*, and *Montage*.

The first two patterns, *Sieve* and *Tangle*, are opposed, and reflect in some degree Gall and Hannafin's hierarchical and referential linking structures. In the *Sieve*, readers pass through layers of sequentially subordinated nodes, while in the *Tangle* they are confronted with a number of links but not provided with sufficient information to make informed choices between those links. The latter is common in literary texts, and might be employed, Bernstein (1998) suggests, to "intentionally disorient readers in order to make them more receptive to a new argument or an unexpected conclusion," to "encourage browsing and discovery," and to "entice the reader while frustrating the quest for release and resolution" (¶ 25-28). As we shall see, however, it is likely that the Tangle hinders more than facilitates "the quest for release and resolution." Certainly empirical research with readers of informational hypertext shows that disorienting readers, whatever the intent, is more likely to put them off than to "entice" them or to make them "more receptive" to new arguments (cf. Rouet and Levonen 1996, pp. 16-17).

Cycle and *Split/Join* are related to one another in some respects. *Cycle* returns readers repeatedly to a central node from whence they may depart along different paths. The effect of this pattern, according to Bernstein, is to encourage the rereading of a particular node in a succession of different contexts, and thereby to prompt in readers an awareness of how a passage presented in a new context may take on a different weight or significance in relation to the whole. Here Bernstein appeals to Joyce's (1997) notion that rereading is an activity integral to hypertext reading: "Hypertext fiction" Joyce asserts, "in some fundamental sense depends upon rereading (or the impossibility of ever truly

doing so) for its effects" (p. 584). *Split/Join,* a pattern in which two or more narrative sequences diverge or converge in accordance with the choices made by individual readers, also promotes rereading. Such texts, Bernstein observes, appear "trivial and game-like" at first, but become "morally meaningful" when the alternate paths are explored on subsequent readings. Whether a general audience will ever move beyond the trivial "game" stage by bothering to reread hypertexts extensively is a question Bernstein does not address. If Platt (1994) is right about readers preferring good story, however, one would think this may not be the case.

Counterpoint and *Mirrorworld* comprise another pair of structures that appear to encourage similar reading strategies. In *Counterpoint*, "two voices alternate, interleaving themes or welding together theme and response" (¶ 14). Bernstein compares this pattern to the call and response of liturgy and casual dialogue; but in fact, it is perhaps better likened to counterpoint in orchestral works wherein distinct melodies may echo and accompany each other in a high degree of sophistication and such that both harmonic and rhythmic interest result.[5] Such musical patterns require a great deal of intellectual and emotional involvement on the part of the listener in order to unravel the dense rhetorical webs evidenced in each successive piece. The use of a counterpoint structure in hypertext requires a similar effort on behalf of readers, according to Bernstein, who are invited to explore the connections and differences (or consonances and dissonances according to my own comparison) between various themes. *Mirrorworld* likewise is distinguished by an echoing, or elaboration, of a particular theme outside of the main narrative thread, but it is distinguished from Counterpoint thus: "where Counterpoint interweaves different voices of equal (or nearly equal) weight within a single exposition, the Mirrorworld establishes a second voice that separately parallels (or parodies) the main statement" (¶ 21).[6] This method of development may be used to a number of different effects: for example, the Mirrorworld may act as a choral device by revealing and commenting on the thoughts and actions of particular characters, or it may emphasise a particular theme by drawing it out on a metaphorical level.

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[5] An excellent example of musical counterpoint is the final movement of Mozart's Symphony No. 41 in C (K. 551).

[6] While Bernstein does not make the comparison, it is clear that his notion of Mirrorworld is similar to the musical conception of fugue, wherein a melodic theme is introduced by one part and taken up and elaborated successively by the others, as in Bach's "Little Fugue" (BWV 578).

Finally, *Montage* presents several distinct writing spaces simultaneously, generally through the use of superimposed windows, each of which reinforces the other information displayed on screen. As the name suggests, Montage is collage-like and enables the piecing together of various media in order to effect a composite whole. Readers may view (say) three open windows at the same time, one displaying text, one displaying an accompanying image, and one a film clip. Bernstein observes that the chief rhetorical device of Montage is juxtaposition. Readers are thereby encouraged to make connections between the different "neighbourhoods" of Montage just as they might make connections between the different themes presented in Counterpoint.

Three points might be made with respect to Bernstein's categories. First, with the possible exception of the *Tangle*, the patterns Bernstein observes in hypertext are not peculiar to the genre. Although the electronic medium certainly affords interesting and unique ways of manipulating structure, cyclical narrative patterns, interleaving or parallel themes, and juxtaposition are well-established conventions in print literature. For example, Huxley's *Point Counter Point*, as the title suggests, is a blatant example of a narrative that demonstrates the concept of counterpoint on a structural level, and the Split/Join pattern, although in a severely curtailed form, is discernible in young adult fiction and children's story books (i.e., *Choose Your Own Adventure* and the *Famous 5 Adventure Games*). Second, as Bernstein himself observes, any given hypertext may of course incorporate a number of different patterns just as any print text or any musical composition may overlap different rhetorical structures. Finally, unlike printed texts (which necessarily remain fixed until such time as a revised edition is produced), hypertexts are often fluid entities that are transformed on an ongoing basis according to the changing desires of the author or even of the readers. This fluidity of form compounds the difficulty of developing a vocabulary of concepts and structures that will help us to an understanding of the relationships between nodes and links.

In this regard, Joyce (1995) makes a final distinction that is worth noting here between exploratory or constructive hypertexts.[7] The former (i.e., most CD-ROM print adaptations) are "read-only": in some instances provision is made for readers to make

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[7] The term "discursive" is sometimes used synonymously with "exploratory" (see Brooks [1993], p. 451).

notes, to highlight passages, or to copy text and graphics using a provided clip board, but as in print text, any amount of underscoring, marginal notation and copying does not alter the content and structure of the original document. In both cases a reader's counter-arguments, observations, exclamations, and so on, appear "other" to a centralised text. Conversely, constructive hypertexts, such as the Intermedia system that operated at Brown University in the early 1990s (see Landow, 1997), are collaborative in that they allow readers to reconfigure the existing material by adding new nodes or links. According to Joyce (1995), constructive hypertexts are "versions of what they are becoming, a structure for what does not yet exist" (p. 42).

To return to the question of how different text structures may affect reading, empirical research shows that some of these forms pose greater problems for readers than others. In a study of readers working with an informational hypertext on North African countries, Mohageg (1992) found that highly networked non-hierarchical environments challenged readers most and produced a negative effect on task performance. Hierarchical linking, on the other hand, proved most helpful in enabling readers to complete their tasks, while combined networked-hierarchical linking systems fell somewhere in the middle. Mohageg concludes, "the use of network links in isolation from organisational linking should be strongly discouraged" (p. 366). His position is supported by several other researchers (i.e., Dee-Lucas & Larkin, 1992; Simpson & McKnight, 1990; Rouet & Levonen, 1996).

Another solution promoted by empirical researchers to reader disorientation within extensive informational hypertexts is provision for macro-structures such as maps or "fisheye" overviews (i.e., Kim & Hirtle, 1995; Gray & Sasha, 1989; Foss, 1989; Rouet & Levonen, 1996). However, it is clear from the discussion in the previous chapter that design elements that echo print constructs by promoting concepts such as hierarchy run counter to what hypertext theorists in the humanities have deemed one of the chief mandates of innovative authors in the new medium; namely (to cite Landow [1997] on the topic again) the abandonment of "conceptual systems founded upon ideas of center, margin, hierarchy, and linearity" and the replacement of those systems with ones of "multilinearity, nodes, links, and networks" (p. 2). Thus, while Mohageg's suggestion that network linking not be used in the absence of hierarchical linking may be a plausible

solution for designers of (say) informational hypertexts such as encyclopaedias, it is clearly limiting for those who wish to push the boundaries of the medium. It is not surprising, therefore, that hierarchical linking is not characteristic of literary hypertexts, and that overview maps, while a feature of some stand-alone texts authored in *Storyspace* because the software provides for their inclusion, are also uncommon.

Missing and making the connections

The difficulty readers have in following networked links seems attributable to a number of factors, not all of which can be alleviated by the use of maps and overviews. The assumption inherent in the claim that overviews assist in reader navigation of hypertext is that readers need to get a sense of the space, or structure, of the text in order to process the words therein. As Bolter (1991a) observes, the book in the electronic age is "abstract—a concept, not a thing to be held" (p. 87)—or *beheld*, he might have added. If maps enable readers to visualise that intangible space, then disorientation may be assuaged. To some degree this may be so, and yet it seems disorientation among hypertext readers is not caused entirely by macro-level structures, or to a desire to "visualise" the layout of the text; rather, reader problems also appear to derive from an inability to follow the links provided by author(s) in a semantic sense.

In a study of this sort of semantic disorientation, Holt and Howell (1992) gave student participants twenty pairings of paragraphs: five were deemed by independent judges to be related, five were deemed semi-related, and ten were deemed unrelated. They asked participants to state which paragraph pairings were in fact related. Interestingly, students found this task exceedingly difficult: many failed to identify relationships, while others noted relationships where none supposedly existed. The authors, who were working on the development of a programme that would enable automated maintenance of links in dramatically changing hypertexts, were somewhat surprised by their results. Not only did the students fail to identify relationships "correctly," they were also inconsistent and vague about how they found the paragraphs to be related. This research points to another contributing factor to hypertext disorientation: the movement toward stand-alone textual nodes at the basic structural level of hypertext documents also demands the removal of the transitional cues that

populate most print texts. Where the direction of links is left ambiguous, which is the case in most literary hypertexts, readers may be left guessing as to the semantic connections intended by the author.

Of course, an inability to make semantic connections must also be attributed to the familiarity of the reader with the subject matter. None of the readers in Holt's and Howell's study were subject-area "experts." Although their reading material, the Microsoft Excel manual, was evidently chosen in an effort to circumvent this problem—because of its "highly structured and presumably logical" nature, and because it targeted non-experts—it was nevertheless difficult to predict whether the subjects' inability at times to effectively identify semantic relationships was a function of the decontextualisation of the reading matter, or of their unfamiliarity with the programme it supplemented. Nevertheless, it is reasonable to predict that, had the readers even moderate knowledge of Excel or like programmes, they might have managed better the task of determining paragraph relationships. Along these lines, Mohageg (1992) observes that while subject area novices may be better off using hierarchically linked systems, "domain experts may immediately find utility in relational linking. They may recognise that certain linked words lead to desired information, whereas novice users may fail to recognise the utility or importance of particular links" (p. 366).

The benefits of networked linking in documents aimed toward subject-area specialists is supported by the research of Spiro, Coulson, Feltovich, & Anderson (1994), who discuss how hypertext might best be structured to meet the needs of those who are engaged in "advanced knowledge acquisition." They define such learning as that which is "beyond the introductory stage for a subject area but before the achievement of practised expertise that comes with massive experience" (p. 603). This sort of learning requires that readers attain a "deeper understanding of content material, reason with it, and apply it flexibly in diverse contexts"; in short, they must become "cognitively flexible" (p. 603). But this process is often in direct conflict with introductory instructional strategies:

> The methods of education in introductory and advanced learning seem, in many ways, to be at odds. For example, compartmentalising knowledge, presenting clear instances (and not the many pertinent exceptions), and employing reproductive

> memory criteria are often in conflict with the realities of advanced learning—knowledge, which is intertwined and dependent, has significant context-dependent variations and requires the ability to respond flexibly to "messy" application situations. These discrepancies in aims and tactics (along with many others that we have observed) raise the possibility that introductory learning, even when it is "successful," lays foundations in knowledge and in an approach to learning that interfere with advanced acquisition. (Spiro et al., 1994, p. 603)

The research group observes that the dichotomy between teaching methodologies in introductory and advanced courses is especially problematic in ill-structured knowledge domains, such as medicine, where concepts are often case-specific and therefore resist consistent application. While this argument is constructed within a scientific paradigm, we might easily apply the criteria for "ill-structuredness" to literature, a learning domain that is also plagued at the introductory levels by a tendency toward oversimplification and inappropriate abstraction or compartmentalisation.

In an empirical investigation of hypertext learning in such ill-structured domains, Jacobson and Spiro (1995) show that, unlike hierarchical linking, network linking also allows for a sort of "thematic criss-crossing" that encourages a more sophisticated understanding of the subject matter and prepares "students to use their knowledge in new ways and in new situations" (p. 329). Thus, the problem of determining the benefits of hypertext for learners becomes even more involved: educators must determine in which scenarios the possible disadvantages of particular designs in terms of potential reader disorientation are outweighed by the benefits of encouraging a more sophisticated, cognitively flexible, approach to learning.

Learning, teaching and reading with(out) computers

To return to our English classroom, although Curt may be right to question some aspects of the medium, his desire to keep a tight rein on Aaron also reflects his own unwillingness to be flexible in his teaching practises. The techniques he favours are teacher-centred and rule-bound (his students literally cannot move outside of the margins

stipulated in the MLA guidelines); moreover, he favours "rote learning" (i.e., copying quotations from Frye), which involves ingesting isolated bits of information rather than relating new material to existing knowledge (Lefrancois, 1988, p. 94). If we consider again the common instructional methodologies used in introductory classes named by Spiro's research group—"compartmentalising knowledge, presenting clear instances (and not the many pertinent exceptions), and employing reproductive memory criteria" (p. 603)—we see one plane on which Curt and Aaron are bound to conflict. The more Aaron, an advanced student, attempts to challenge himself by seeking flexible learning environments, the more he threatens Curt's long-held, conventional philosophy of education. As Landow (1997) contests, by "holding out the possibility of newly empowered, self-directed students, [hypertext] demands that we confront an entire range of questions about our conceptions of literary education" (p. 219).

The cognitive disposition of the reader respecting the acquisition of knowledge is thus the final factor influencing reader response to hypertext I wish to discuss in this chapter. Jacobson and Spiro (1995) claim readers' "epistemic beliefs"—their beliefs about the nature of learning and the structure of knowledge—likely temper their ability to negotiate a hypertext system. In a pilot study conducted alongside their research into hypertext instruction in ill-structured domains, they asked students to rate the extent to which they agreed with a number of statements about learning. Students who demonstrated a belief in directed learning methodologies (such as those promoted by Curt), and who were exposed to a non-hierarchical, multiply-linked learning environment, scored lower on essay tasks that tested for transfer of knowledge to new situations. The authors posit that these readers had difficulty with the "nonlinear and multidimensional nature of the experimental hypertext system" because it conflicted with their preferred style of learning (Jacobson & Spiro, 1995, p. 327).

Leaving out literary hypertext

Empirical studies of hypertext readers thus point to the complexity of "what goes on behind the screen." It would seem Curt is in certain respects correct: some forms of hypertext may indeed lead to the sort of thinking he deems "horizontal," as revealed in Taylor and Self's (1990) study. Whether such strategies are prompted primarily by the

nature of the medium itself or by user inexperience with the medium, however, is still largely a matter of speculation; and whether hypertext will prove more beneficial for some—say expert readers or learners possessed of a particular cognitive disposition—is also a question deserving of further exploration.

Clearly there are limitations to this research. Most notably, all studies reviewed in this chapter, which are representative of the field, involved readers of informational rather than literary texts. All were task-oriented: subjects were either asked to locate information or to "study" the text as though for an exam. Most focused on cognitive rather than affective response, investigating such things as information retrieval time, retention, and comprehension (i.e., Gray & Sasha, 1989; Taylor & Self, 1990; Mohageg, 1992; Leventhal et al., 1993). While the process of reading expository texts may be amenable to this sort of analysis, the process of reading literary texts demands a different discourse and a different mode of analysis.

Part III

Many paths and much throng-noise

Study I: "The Demon Lover"

"One might assume," observes Douglas (2000), "since hypertext has generated such a buzz over its potential for reconfiguring the roles of author and reader, that academia would be swamped [by] articles scrutinizing how readers handle hypertext" (p. 73). Instead, the opposite is true: Douglas questions whether there are even a dozen "studies or considerations of how hypertext may transform the way we read or write texts, and, indeed, our whole conception of a satisfactory reading experience" (p. 73). In this assessment, she disregards articles that examine the question of disorientation from "the perspectives of interface design and software engineering" (p. 73). In fact, it would appear she disregards most empirical studies of informational hypertext such as those discussed in the last section regardless of whether disorientation is the focus. Nevertheless, her point is well taken: in spite of the wealth of theoretical writings on hypertext, and in spite of the efforts of empirical researchers working with informational hypertexts, there exist few examinations of how reading processes may change when readers interact with literary hypertexts. My aim in this part is to address this gap by presenting two studies with 100 readers of literature in hypertext form.

Finding a different mode of analysis

In the last chapter, I observed that examining the processes involved in reading literary texts requires a different mode of analysis than that deemed suitable for examining the cognitive processes involved in reading expository text. I should add that framing the question of what it means to read literary hypertext also demands a different mode of analysis than that currently favoured by hypertext theorists, who have consistently privileged structure over content in speaking of how hypertext modifies reader strategies (cf. Moulthrop, 1993). As Miall (1999) observes, the current "rhetoric of liberation" espoused by hypertext critics such as Landow renounces the notion of the

discrete work, portraying texts instead as unmargined and defenceless against the randomness of large electronic text environments such as the Internet (¶ 6).[1] In this view, there can be no distinction between literary and informational hypertext and, apparently, no distinction between the processes of reading either of these forms. Nowhere is this attitude clearer than in the widespread use of topographical metaphors to describe both electronic textual spaces and the processes of reading and writing in those spaces. Before outlining the methodology of Study I, I should like first to consider the shortcomings of this mode of analysis, and to describe the alternate approach I have used to frame my own empirical research.

The problem with topographical metaphors of reading literary hypertext

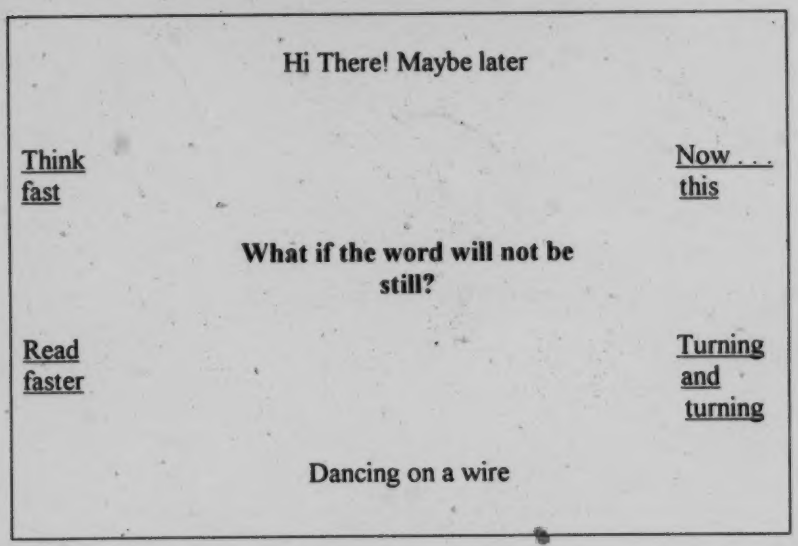
The Internet has long been dubbed the "electronic frontier" in keeping with the prevailing perception of it as a sort of lawless, uncharted place—a *W*ild *W*ild *W*est—that users explore at their own risk (cf. McLure, 2000 and Ludlow, 1996). Bolter (1991a; 1991b) takes up this metaphor when he describes hypertextual writing as "topographic," a writing with places; as does Moulthrop (1991) when he likens hypertextual reading to an exercise in cartography. Likewise, Leventhal et al. (1993) appropriate Siegel and White's (1975) spatial acquisition theory to describe the movement of their readers through an electronic encyclopaedia. To reiterate, Leventhal's readers apparently oriented first to "landmarks," then to significant routes between these landmarks, and finally to the wider network of paths connecting the various places within the hypertext. And yet, while a topographical metaphor may help us visualise the activity of writing hypertext and the process of navigating informational hypertexts such as electronic encyclopaedias or the greater portion of the Internet, it fails to illuminate how readers might orient themselves within literary hypertexts, many of which are purposely devoid of "landmarks" and "significant routes," and which therefore preclude the sort of orientation strategies in which Leventhal's students engaged.

In *Hegirascope*, for example, Moulthrop (1997) purposely stymies reader orientation by making unusual use of the META attribute of HTML to refresh the screen

[1] The same unmargining of discourse also applies, if in a less literal way, to the influential free-standing fictions published by Eastgate Systems.

eight times on three-second intervals at the beginning of the hypertext.[2] Readers who are not aware of the default setting find the screens pass before they are able to read them. Ostensibly, this is not a problem, for anyone who takes the time to start again (this time geared up to speed-reading mode), discovers that the second set of eight screens displays the same textual content as the first set with a longer refresh time (8 seconds) and the addition of four marginal links on each node (see Figure 2).

Figure 3.1: *The ninth node of* Hegirascope, *HGSOB1.html (the text is black on a yellow background)*


Hi There! Maybe later
Think fast
Now . . . this
What if the word will not be still?
Read faster
Turning and turning
Dancing on a wire

Nevertheless, even given the repetition, the effect of the rapid-fire introductory screens of *Hegirascope* is rather like the effect of spinning a blindfolded player of "pin the tail on the donkey" before releasing him to set about his task: it serves to confuse readers' spatial perception. There can be no "home key" for those who "dive in" according to Moulthrop's recommendations in the introductory notes to the text—unless they have the presence of mind to bookmark the beginning page. Indeed, the default condition makes even backing up to the beginning difficult. Instead, readers quickly find themselves several screens into the design space with no navigation keys and little to guide their choices between links. Moreover, while there is a significant route (the default route), clearly those who sit back

[2] In hypertext markup language (HTML), the META attribute is typically used to control the action of browsers or to refine the indexing information provided in the headers.

and let the hypertext turn its own pages (eventually on less frantic, 30 second intervals), are not likely to acquire a sense of the text's interconnecting pathways any more than a tourist might gain a clear sense of London's interconnecting routes by taking a sightseeing trip on a double-decker bus. [3]

Similarly, guard functions in *StorySpace* texts like Joyce's (1987) *afternoon* make problematic the business of acquiring knowledge about textual "topography" because they ensure that significant routes are subject to change. And even literary hypertexts *with* navigation keys do not necessarily permit the sort of spatial knowledge acquisition that Leventhal's group observes of its readers. Malloy and Marshall's (1996) *Forward / Anywhere*, for example, is a multi-sequential fiction with navigation keys—readers may move "forward," "anywhere," or follow "lines" by clicking on one of three buttons bearing these titles at the bottom of each screen. Yet, as is the case with many literary hypertexts, these navigational devices do not function as they might in informational texts, linking back to central screens from which readers may branch out on their explorations again. On the contrary, clicking on "forward" takes readers on a default path through the network; "anywhere" moves them randomly to another page; while "lines" leads to an unread node (if one is available) that has vocabulary in common with the current node. Readers may also navigate by clicking on any word in the text, whereupon they will be moved to an unread node (again, if one is available) containing the same word. Therefore, clicking on the navigation buttons in this text generally propels readers along to new material, often in ways that appear somewhat haphazard. As Moulthrop (1992) observes, this is intentional: "the experience of hypertextual reading is fundamentally dissonant" (p. 115). Unlike the designers of informational hypertexts, authors of multi-sequential literary texts are generally in the business of ensuring that no route through the network is privileged so that they might experiment with notions such as non-linearity, open-endedness, and the dispersal of text. This last in particular involves, according to Snyder (1996), the introduction of "randomness" (the "anywhere" factor in *Forward/Anywhere*). She

[3] I asked a group of students, most of whom were enrolled in a graduate-level seminar on reading, to read *Hegirascope* online and to email me their responses. Their reaction to the text was strongly negative. The default condition in the opening sequence frustrated and disoriented readers. Only two of ten students began by way of the index, which circumvents the opening screens and gives a stable starting position, but even these readers struggled to situate themselves within the network.

elaborates, "each [node] takes on a life of its own as it becomes more self-contained and less dependent on what precedes or follows it in a linear succession" (Snyder, 1996, p. 53). Thus, even were we to agree that spatial acquisition theory were well-suited to describing the process of literary reading, clearly it would remain ill-suited to describing the process of navigating the featureless, shifting literary landscapes that are common in hypertext.

There is a second—perhaps more serious—problem in applying topographical metaphors broadly to the question of reading hypertexts: namely, such theories account only for reader response to the macrostructure of the text (i.e., Where does this chunk of text fit in relation to that chunk of text?). They fail to recognise the distinctiveness of literary texts by taking into consideration the structural significance encoded at the micro-level of the text in the form of, for example, striking stylistic features. Further, they do not consider how affective and cognitive response to literary text may be influenced by such features, or how attention to this level of the text may be modified by hypertext structures and navigational devices. In short, in their excitement over the ways in which computer technology is pushing textual boundaries, hypertext theorists consistently fail to examine reader response to literary text in light of established theories of reading. Ultimately, while some topographical language is unavoidable in a discussion of hypertext reading, in general the question of hypertext reading needs to be framed differently: rather than examining it from the standpoint of what we know about text technologies, we would do well to examine it from the standpoint of what we know about reading processes with a view to determining how hypertext might facilitate, hinder, or extend those processes (cf. Miall & Dobson, in press).

Two theoretical frameworks of literary reading

In designing this preliminary reader response study, therefore, I sought to ground my method in two existing theoretical frameworks of literary reading that do take into consideration the complexities of literary reading processes, and that might provide a better window on the question of how—or if—such processes change in the hypertext environment; these frameworks are Defamiliarization Theory (Miall & Kuiken, 1994a; Miall & Kuiken, 1994b), and the Situation Model Construction Process (Zwaan, Magliano, & Graesser, 1995).

i. Defamiliarization Theory

Miall and Kuiken (1994a) suggest that understanding literary response requires a different mode of analysis from that implicit in text theories that have been developed based on studies of "normal" (i.e., informational) prose, such as Kintsch's (1988) Construction-Integration Model. These models, they note, generally describe "a resource-limited system in which cognitive structures (e.g., story grammars) or procedures (e.g., integrating processes) economize comprehension by deleting irrelevant propositions, inferring relevant propositions, and building macropropositions" (p. 344). In other words, they focus on how comprehension is facilitated or economised. In this respect, they are too limited for the purpose of understanding response to literature because the essence of literary text dwells at least in part in its stylistic features, and these features are less likely to *economise* comprehension than to "*complicate* [it] by challenging the familiar, prototypic concepts that readers initially apply to the text" (p. 344).

As an alternative, they propose "Defamiliarization Theory," which is based on the premise that literary text is distinguished from informational text in that it is highly *foregrounded*. The notion of foregrounding, they explain, has its origins in the work of Czech theorist Jan Mukarovský (Mukarovský's term is *aktualisace*), and is defined as follows:

> It refers to the range of stylistic variations that occur in literature, whether at the phonetic level (e.g., alliteration, rhyme), the grammatical level (e.g., inversion, ellipsis), or the semantic level (e.g., metaphor, irony). As Mukarovský pointed out, foregrounding may occur in normal, everyday language, such as spoken discourse or journalistic prose, but it occurs sporadically without systematic design. In literary texts, on the other hand, foregrounding is structured: it tends to be both systematic and hierarchical. That is, similar features may recur, such as a pattern of assonance or a related group of metaphors, and one set of features will dominate the others . . . (Miall & Kuiken, 1994b, p. 390)

Miall and Kuiken's research shows that readers of literary text find foregrounded passages striking, and that such passages typically result in *defamiliarization*, a process during which readers step back, as it were, from the text, reassess what they had perhaps taken for granted, and then refamiliarise themselves with the passage in light of this new understanding.

The following lines from Donne's "The Ecstasy" serve well to illustrate the concept of foregrounding and defamiliarisation, particularly on the semantic level:

> Our eye-beams twisted, and did thread
> Our eyes upon one double string. (1633/1983, p. 106)

Interestingly, this metaphor, at once exquisite and tortured, is the subject of a classroom interchange in Margaret Laurence's (1974) *The Diviners*, wherein Morag Gunn, a fictional first year literature student, musters up the courage to remark upon it, surprised all the while at how Donne's lines have taken hold of her so that "she forgets about everything else, even the curious eyes of her classmates":

> I thought it was pretty difficult at first . . . and maybe I don't really get it, but it seems to me if you can get inside the image, sort of, then it's amazing that anyone could catch in words that kind of closeness—I mean, two people who love each other are separate individuals, but they're both seeing everything, including themselves, through the other person's eyes. (pp. 190-191)

Donne's lines are at first "pretty difficult" for Morag because they successively recast the familiar in an unfamiliar light. The comparison of sight to beams, *twisted* beams, and finally to string upon which the eye is threaded, requires her to reconceptualise what it means to "see" not once, but three times; and the metaphor in its entirety subsequently invites a reframing of the concept of seeing *through* another's eyes. The result is a refurbished, and potentially deepened, understanding that evokes a felt response: "it's amazing that anyone could catch in words that kind of closeness." As Miall and Kuiken (1994a) put it, the reader creates "an alternative meaning which is at once conceptually novel and affectively enriched" (p. 338); thus, poetic language "overcomes custom, it defamiliarizes, and it restores feelings that were blunted or decayed" (p. 343).

The premise of defamiliarization theory is that such affective response to literature is guided at least in part by stylistic features at the local and global level of the text that are "artistic" in a literary sense. This framework consequently offers a way of approaching the question of hypertext reading because it both distinguishes literary text from other forms of text and proposes ways in which certain features of literary texts may affect the reading experience (although, at this stage it does not take account of other features possibly distinctive to literary reading, such as narrative features, genre expectations, and so on). Thus, we might hypothesise that readers of literary hypertexts navigate a networked document according to a set of principles very different from those that steer the readers of informational hypertext, who are often guided by external motivators such as locating information to complete a set task. Readers of hyperfiction, for instance, might gravitate toward links that are situated in highly foregrounded passages. The effect of foregrounding in this scenario would become doubly consequential: in addition to evoking affective response, the foregrounded stylistic features of a literary text may play a key role in influencing reader path. (Of course, doubtless other factors—most notably, individual variation between reader values and motives—also influence reader choice of links.)

ii. The Situation Model Construction Process

The second theory of reading that figures largely in my own study is the situation model construction process described by Zwaan and his colleagues (Zwaan & Radvansky 1998). According to this model, the act of reading involves readers constructing not only "a mental representation of [a story's] words and sentences but also of the situations that are conveyed by these words and sentences" (Zwaan, Magliano, & Graesser, 1995, p. 386). A situation model comprises arguments (or propositions) and their relationships (connections between referents). For example, the first person narrator of Poe's (1843/1985) "The Tell-Tale Heart" puts a number of propositions in the first two paragraphs of the story: i. he is nervous—*dreadfully* nervous—but not mad; ii. his senses, particularly his hearing, have been sharpened by an unnamed disease; iii. he loves the old man, but not his eye; iv. he will take the life of the old man and thus rid himself of the eye forever. A reader of this text must process each of these arguments, some of

which are clearly contradictory, and determine their relationships; in other words, she must construct a situation model. And of course, as she progresses through the text, encountering more propositions, she must continuously update her model. For instance, she will likely revise her understanding that the narrator is not mad.

According to this model, readers are typically attentive to shifts in time, space, and causation as well. Thus, if a character is described in the room of a house in one sentence, then outside the house in the next sentence, readers must construct an appropriate spatial model to understand the second sentence. Or, as in the first paragraph of "The Tell-Tale Heart," when the narrator speaks in the present tense in one moment and the past in the next, readers must integrate that information and come to the understanding that this man to whom they have just been introduced is about to recount an event that happened some time ago.

The mental activity of constructing the situation model, like the mental activity of responding to foregrounded passages, requires additional processing time. Therefore readers are likely to progress more slowly through the beginning of a story where, typically, there are clustered the largest number of new arguments (Zwaan, et al., 1995). Conversely, as they read forward through the text they generally encounter an increasing number of "overlapping" arguments—those that continue established themes—and they are therefore able to progress more quickly.

In the case of foregrounding, which is generally dispersed throughout a literary text, processing requirements are rather different, shifting repeatedly depending on the distribution and sophistication of artistic stylistic features. As both Miall and Kuiken and Zwaan and his colleagues have shown, coding the segments of a short story for components such as foregrounding and situation model variables provides a set of measures for predicting processing requirements; these may then be tested by collecting reading times. I shall return to this notion shortly.

Study I Methodology

Participants and procedure

Let us turn, then, to the method employed in the preliminary study. Readers were forty students, 21 male and 19 female, who ranged in age between 17 and 28. I invited readers to participate in this research for a nominal fee by situating a table in a high-traffic area of a university campus and waiting for passers by to inquire about the project. Consequently, most readers were enrolled in undergraduate courses or were prospective students completing their final year of high school. They represented many disciplines, and their experience with literature and with computers (self-rated) varied from limited to expert. Having been assigned to one of two reading conditions I shall discuss shortly, participants completed three tasks during a period of one and one half to two hours: they read a story on computer screen, self-recorded their responses using a tape recorder, and completed questionnaires about their reading preferences and computer experience. No more than three readers, each working individually in separate rooms, completed the process at one time.

The text

The text used in Study I was "The Demon Lover," a modernist short story by Irish author, Elizabeth Bowen. This ghostly tale about a woman forced into a spectral appointment with her dead fiancé is stylistically complex and charged with ominous detail. The story is set in London during the Second World War, and details an afternoon in the life of Mrs. Drover, a middle-aged woman who has returned briefly to her deserted and bomb-damaged London home in order to retrieve some belongings. Upon entering the abandoned house, she discovers a mysterious letter that bears the day's date and appears to have been written by her first fiancé, a man presumed dead for some twenty-five years. He suggests that it is time for her to make good her original promise to him. With growing apprehension, and plagued by vivid and unpleasant flashbacks to her early courtship, she hurriedly gathers her belongings from the gloomy home and escapes to the street. She is relieved to find a solitary taxi standing on the square, but when she leans forward to direct the driver, she is met by the ghostly and sinister lover from her past. At

the last, the taxi accelerates "without mercy" into the "hinterland of deserted streets," its terrified hostage screaming and beating her hands on the glass.

Participants read this short story of approximately 3000 words on computer screen as a series of 24 separate nodes reflecting, for the most part, its paragraph divisions. The layout and design were plain, especially in comparison to some of the innovative multimedia hypertexts now available online in which colour, graphics and animation are used extensively. Text was presented in black, 12-point, Times New Roman font on a plain white background. Readers were not required to scroll because the contents of each node fit easily within the confines of a 640 by 480 pixel display area (the average number of words per node was 126; the range, 13 to 264 words). Links were distinguished in the conventional online fashion as underscored blue text.[4]

Linear and simulation reading conditions

Readers were assigned randomly to one of two conditions. The control group (ten male and ten female) read "The Demon Lover" in a structurally linear format, activating a "next" link positioned at the bottom of the screen in order to move from node to node (see Figure 3).[5] The simulation group (eleven male and nine female) read the same text presented in *simulated self-navigating* hypertext form, where, instead of activating a "next" link, they were required to choose between two or three links embedded within the text of each subsequent node in order to progress through the story (see Figure 4). The presence of choice was illusory, however, for regardless of link choice, the simulation readers encountered "The Demon Lover" in the same order as did the linear readers (see Figure 5 for a diagram of the simulation linking structure). Consequently, the experimental text, although identical in content to the control text, simulated in some respects the experience of hypertextual reading.[6] I constructed each of these texts using

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[4] The uncomplicated design is intentional: it is not the aim of this study to examine the effects of graphics, colour, or special effects on reading; rather, it is the aim of this study to isolate key textual features (in this case the presence of embedded links and the apparent presence of multiple narratives) on literary reading processes.

[5] The terms *linear* and *self-navigating* are used here simply as a way of differentiating between the structural formats of the two texts. Some have argued that linear (usually paper) texts are read in a "sequential" fashion while self-navigating hypertexts allow for "non-sequential" reading. This assumption and its shortcomings are discussed in Dillon (1996).

[6] There are a number of drawbacks to this design, one of which is that readers were not able to move back and forth through the text. The implications of the design shortcomings are discussed later in this chapter.

HyperWriter, an authoring programme with a tracking feature that allowed automatic collection of reading times and link choices.

Figure 3.2: *The fourth node of "The Demon Lover" presented in linear form*

A shaft of refracted daylight now lay across the hall. She stopped dead and stared at the hall table—on this lay a letter addressed to her.

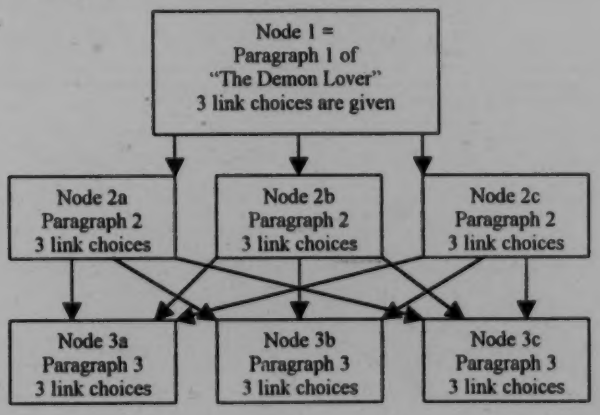
Next

Figure 3.3: *The fourth node of "The Demon Lover" presented in simulated hypertext form*

A shaft of refracted daylight now lay across the hall. She stopped dead and stared at the hall table—on this lay a letter addressed to her.

Figure 3.4: *Simulated self-navigating hypertext linking structure*

The linking structure of the first three nodes is shown. All nodes in the second layer are identical, as are all in the third, and so on. This linking structure enabled tracking of the readers' link choices.



Simulation links

Linking words or phrases in the simulation text were selected on the basis of their tendency to promote attention to one of three literary features: plot, character or foregrounding. Plot links mirrored as closely as possible the sort of commands evident in text-based electronic game environments; in this respect they were generally concrete nouns or prepositional phrases (i.e., "the door" or "went in"). Character links were generally names, personal pronouns, or emotions (i.e., "Mrs. Drover," "she," or "anxious"). Foregrounded links were embedded in phrases containing stylistically remarkable elements (i.e., "white burning blank"). Thus, in the node shown in Figure 4, "refracted daylight" is the foregrounded link, "letter," the plot link, and "her," the character link. It might be postulated in this instance that readers who are moved by imagery would be more inclined to select the link that describes the light playing across the hall, that readers who are story-driven might be moved to discover the contents of the letter, and that readers who tend to read with empathic attention to character might select "her" in the hopes of learning more about the protagonist.

It is important to emphasize that these links constituted the only difference between the linear and simulation models. The layout and content of the text was otherwise identical in both conditions. For this reason, it was at times difficult to select linking words or phrases with obvious semantic or logical connections to the subsequent paragraph, although this is indeed what I attempted to do. For example, the short node shown in Figure 4 leads to a longer node detailing Mrs. Drover's annoyance with the caretaker for failing to retrieve the letter and to forward it to her country home. While contemplating his apparent lapse in reliability, she carries the letter to an upstairs room where she looks over its contents. The passage follows well from both the character and plot links, but readers who choose the foregrounded link expecting further discussion of the "shaft of refracted daylight" may be disappointed given that the disposition of the light in the hallway does not figure at all in the subsequent node. Although there is some ominous description of the changing afternoon light toward the end of the node—the sun

disappears behind the lowering clouds, and the "trees and rank lawns [seem] to smoke with dark"—the immediate connection is not strong.[7]

When considered in light of existing hypertexts, however, the fact that all links in the simulation did not have strong semantic or logical connections to the subsequent material is not necessarily a weakness of the design, for it reflects the randomness of many literary hypertexts. To return to the hypertexts discussed earlier in this chapter, it is possible to effect a short (twenty node) reading of *Forward Anywhere* simply by clicking on the word "years" in each subsequent node. (Recall that in *Forward Anywhere* clicking on a word in the text will take readers to an unread node containing the same word.) Such a reading begins like this: Node 1. Judy confesses that her brother started a house fire years ago by lighting the newspapers in the basement on fire; Node 2. Kathy muses over a single can of Coors beer that has been in her refrigerator for almost four years; Node 3. Judy reflects that it has been 23 years since her father's death and contemplates the possibility that she will inherit liver disease; Node 4. Kathy is reminded of the squalor of her old apartment by a literary work about cockroaches—and so on. Clearly only the flimsiest of connections exists between these isolated units of the text. The authors, as stated earlier, are playing with the notion of randomness. Yet even in the event that an attempt at making logical connections between links and nodes is made (as in the case of my simulation), hypertext authors face a difficult task. As I have noted elsewhere, the author's conception of the connection's relevance is not always the same as the reader's. When the element of choice is introduced, it seems, so too are a number of other factors, including the risk of incoherence.

Text coding

A final observation to make about the text used in this study is that it was selected in particular because two other reader-response research groups had analysed it for stylistic and narrative features and these researchers generously agreed to share with me with their data. I am grateful to David Miall and Don Kuiken, who made available their coding of the story for stylistic foregrounding, and to Rolf Zwaan, who made available

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[7] It is also worth observing here that readers who link to the longer node on the strength of "refracted daylight" might understandably read the passage differently, perhaps attributing greater significance to the changing light.

his coding of the story for situation model variables, new arguments, argument overlap, and discontinuities in time, space, and causation, as well as for auxiliary dimensions such as syllables per sentence (Zwaan et al., 1995, p. 389). Coding a story in this fashion is a meticulous process carried out by independent judges that entails noting features (i.e., shifts in time or space) and assigning a score for each variable to individual story segments. To provide a very simple example, the statement "she left the house" would receive a score of one in the spatial shift category of Zwaan's model.

As noted earlier, coding the segments of a short story for such components provides a set of measures for predicting processing requirements. Presumably, readers should slow when they encounter (say) highly foregrounded language or a series of new arguments, and the degree to which they in fact do so may be measured by correlating the scores for those variables on given segments with the actual reading times for those segments. I should note here, however, that for their own purposes both of the aforementioned research groups divided the story into smaller (generally sentence-length) reading units and calculated the foregrounding and situation variable indexes, respectively, on a per-segment basis. Because I divided the story into larger paragraph-length sections, the mean for each node was computed from the relevant segment codings. This allowed for an examination of my readers' responses, in terms of reading times and link choices, in the light of the Defamiliarization and Situation Model theories of reading. Measuring how reading times changed across control and experimental groups thus enabled me to determine whether readers' attention shifted from one condition to another.

Self-recorded commentary

During reading, both the linear and simulation groups were instructed to note striking or evocative phrases on a paper provided for this purpose. Following Larsen and Seilman's (1988) approach, this method of making brief notes, or "personal remindings," was selected as an alternative to the talk-aloud method of data collection in order to approximate as nearly as possible a "natural" reading environment. Larsen and Seilman have shown that such brief personal remindings tend to disturb the natural process of reading relatively little, and that they act as very effective memory prompts in the post-

reading, or retrospective, phase; in their study of readers of literary text, they found that as few as 5% of their subjects incorrectly reproduced key words they had noted during reading. Following reading, participants in Study I revisited the text and, prompted by their remindings, self-recorded i. general comments on their reading experience, and ii. more specific comments about passages they noted as striking or evocative.

The literary response questionnaire

As indicated at the outset of this methodology section, all participants completed two questionnaires. The first of these, the Reading and Computer Usage Questionnaire (RCUQ), is included in Appendix A. The second was an electronic version of Miall and Kuiken's (1995) "Literary Response Questionnaire" (LRQ). This Questionnaire, designed "to assess variation among readers with a relatively well developed conception of literature" (p. 38), measures seven independent factors: i. insight ii. empathy, iii. imagery vividness, iv. leisure escape, v. concern with the author, vi. story-driven reading, vii. rejecting literary values. As such, it provides a way of contextualising reader response and perhaps, on a rudimentary level, predicting its direction. We might anticipate, for example, that readers who score higher on the sixth factor may be more inclined to read a literary work for plot rather than for self-insight, which is the first factor. Miall and Kuiken note, of course, that most readers tend to read multiply, applying a combination of approaches to the text; the administration of this survey was therefore meant only to determine whether readers who identify themselves as having particular values and motivations are inclined to attend to certain features of literary text above others. The results of this survey were ultimately correlated with reader link choices by way of examining what factors might influence readers in this regard.

Problems with the simulation design

Before discussing the results of this study, I should note that there are some obvious drawbacks in terms of the text selected and the simulation design. Hypertext theorists would argue that the method used here is procrustean; how, after all, are we to approach an understanding of the ways in which hypertext modifies reader strategies if we conduct studies by manipulating texts written for a different medium? This, in fact, is

the chief criticism of reader-response research conducted with (or, more to the point, with*out*) hypertext. As Bernstein (1997) observes, "Little recent writing about hypertext is based on careful observation of actual hypertext" (n. p.). In a more recent article, he also criticises empirical researchers who prepare "elaborate studies of how users [get] lost in the Web" only to be greeted, apparently, by incomprehension on the part of their participants: "Lost? What do you mean by 'lost'? I know exactly where I am: the browser says I'm right here" (Bernstein, 2000, ¶ 9). Of course, in his eagerness to undermine empirical research—particularly that which is not based on the observation of *actual* hypertext—Bernstein fails to cite any studies with *actual* readers. Who are these researchers who were greeted with incomprehension by their participants? Are we to assume that the well-oriented reader he "cites" by way of critiquing unduly elaborate empirical studies was a participant in a study he has not named?[8] In fact, Bernstein, who by virtue of his position as head of Eastgate systems is part of an elite circle of hypertext theorists, authors, and programmers, gives no indication that he has ever made careful observation of how a *general* reading audience not well grounded in contemporary literary theory might interact with hypertext in its various forms. Ultimately, Bernstein (1997) claims that bibliophiles and wordsmiths who dismiss hypertext "seem not to be paying attention" to what the genre has to offer (n. p.). He may be right. But by the same token, in theorizing hypertext Bernstein and his colleagues seem not to be paying attention to what we do know about reading processes, and to what we might learn from systematic studies of how hypertext interacts with or modifies those reading processes.

Let me return, then, to what I perceive will be the two primary criticisms of the design: i. that the texts used in this and in the subsequent study are not native to the electronic medium, and ii. that the simulation prevents readers from engaging in activities that are an essential component of hypertext reading (for example, revisiting key nodes in the course of making repeated passes through a network [cf., Joyce, 1997]). Certainly these criticisms are valid. In spite of its guise, "The Demon Lover" lacks many of the defining features of literary hypertext: randomness, ironic juxtapositioning, repetition effected through cyclical structures, the lack of a definitive ending, and so on. Apart from

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[8] His own poor citation practice is rather ironic given that he devotes an entire section of "Chasing our tails/tales" (Bernstein, 1997, n. p.) to criticizing Birkerts (1994) for the same fault.

one flashback, it is chronological. Although it is open-ended insofar as the conflict is not resolved (we can only guess at what becomes of the unfortunate Mrs. Drover), it does have a tangible endpoint. In short, the text's transitional cues belie its true nature, as would Duessa's feet were they to peek from beneath her cloak.

Further, in a highly networked environment readers may browse extensively or loop through a series of nodes repeatedly in the course of their reading. They may back up, revisit a node multiple times from different viewpoints, and so on. It is unlikely that any two readers will pass through the nodes in the same order, or even that they will encounter much of the same material in the course of exploring the same text. Clearly this indeterminacy is an integral part of reading some (but not all) hypertexts,[9] and in choosing not to allow readers such freedom we necessarily close off certain avenues of exploration with respect to determining the nature of reader response to the new medium. Simultaneously, however, we open other avenues of investigation that yield equally important information. In short, the simulation design was devised in an effort to control key variables—to ensure that all readers read the same material in the same sequence so that the effects of linking on literary reading processes might be measured with some degree of reliability. Ultimately, if the task at hand is building a laboratory for testing postmodern literary theory, then this design has serious limitations; if, on the other hand, the task is building our knowledge of reading processes in different mediums, this study makes a modest contribution toward that project.

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[9] Many literary hypertexts, stand alone and otherwise, have default routes, as we have seen. For example, Shelley Jackson's (1995) *Patchwork Girl*, inspired by Mary Shelley's *Frankenstein*, contains a "journal" detailing the female scientist's relations with her monstrous creation. Readers who begin with the journal encounter an intriguing account that is, for the most part, structurally linear. Indeed, the randomness we find in texts like *Hegirascope* and *Forward Anywhere* is not a feature of *Patchwork Girl*, for while effecting a playful interweaving of the various components of her text, Jackson also offers a series of orientation devices that prevent the sort of frustration readers may experience in more arbitrary networks.

Study I Results[10]

Reading times

The following results sections offer analysis of several different kinds of data, including reading times, choice of links, and transcribed self-recorded commentary. Reading times per segment were first analysed to determine if the two groups of readers differed, as suspected. Before calculating the mean reading speed for each group, sections where individual readers paused to note a reminding were omitted in order to avoid distortion of the natural times. Not surprisingly, this analysis revealed that hypertext readers took longer—7.79 seconds longer on average—to read each section than did linear readers (linear: M = 35.43 secs; hypertext: M = 43.22), a significant difference, $t(23) = 3.823$ $p < .01$. The most plausible explanation for this overall difference in reading speed is simply that simulation readers required additional time to choose one of two or three links in order to proceed.

Getting an overall sense of how—or if—the attention of readers shifted from one group to another entailed, as discussed earlier, correlating the coding scores for story elements in individual segments (i.e., foregrounding and new arguments) with the reading times for those segments. Thus, a regression analysis for the two groups of readers was carried out with reading time as the dependent variable. This model also included section position (whether the section came earlier or later in the story) and the number of syllables per section.

The results of this analysis gave a preliminary sense of how the readers' processes may have differed across the control and experimental groups. Correlating reading times and segment position, for example, allows us to determine whether readers increased or decreased their reading speeds throughout the story. A positive correlation in this instance would indicate a tendency for lower segment position numbers to appear alongside lower reading time numbers and for higher segment position numbers to appear alongside higher reading time numbers. A negative correlation would indicate the opposite: lower segment position numbers alongside higher reading time numbers and higher segment position

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[10] I am grateful to David Miall for his considerable assistance in completing the statistical component of this analysis. The data reported here is published, accordingly, in a co-authored study (Dobson and Miall, 1998).

numbers alongside lower reading time numbers.[11] The negative correlation, as discussed previously, is expected: readers tend to begin slowly, accelerating only after they have constructed the situation (see page 82). In this instance, the partial correlation of reading times and segment position revealed that while linear readers conformed to the expected pattern, speeding up notably through the story (the correlation was strongly negative, $r(19) = -.808$, $p < .001$), hypertext readers increased their reading speed only slightly (the correlation was only marginally negative, $r(19) = -.340$). This suggests that while linear readers quickly constructed the situation and advanced through the story, hypertext readers may have had some difficulty doing the same. In terms of other story factors, the partial correlations failed to reveal much of note. Both groups were influenced by foregrounding; this appeared to be a little more significant for the linear readers, $r(19) = .356$, $p < .05$, than for hypertext readers, $r(19) = .339$, $p < .1$. Both groups were also influenced by the New Argument component of the situation model: linear readers, $r(19) = .367$, $p < .05$, hypertext readers, $r(19) = .464$, $p < .025$. None of the other situation model variables had the predicted effect.

Visual inspection of reading data and some comments by participants, however, suggested that readers might have modified their strategies as they became accustomed to the reading environment. For example, it is likely that some participants began to suspect that the text was not in fact multi-sequential. Participant S117 voiced this suspicion: "I wonder if the links I chose changed the shape of the story or not, or if they had no effect and it was just an imagined thing . . . if all the links led to the same place or not." Surmising that such feeling, and any resulting modified reading strategies, would likely come about later rather than earlier in the course of reading, a second set of regression analyses of the story and response data split into two halves was carried out (i.e., the first half of the story [sections 1-12] and the second half [sections 13-24]). This brought to light some suggestive findings (see Tables 1 and 2).

Examining the results of the split-half regression for segment position reveals that linear readers read progressively faster only in the first half of the story ($r(9) = -.470$, $p < .05$). Having constructed the situation, their reading pace then levelled off for the duration. Oddly, this situation was reversed for hypertext readers, who read noticeably faster

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[11] A neutral result, of course, proves the null hypothesis: that there is no relation between the two variables.

towards the *end* of the story, as revealed by the significant negative correlation ($r(8) = -.992, p < .01$).[12]

Table 3.1: *Predictors of reading times: Linear readers*
Partial correlations of story factors with reading times following regression analysis of first and second halves of story responses.

	Sections 1-12 df 9	Sections 13-23 df 8
Segments	-.470	.048
Syllables	.647**	.948***
Foregrounding	.164	-.600*
New arguments	.472	.761***
Time	-.553	.498
Space	.286	.696**
Cause	.519	-.415

*p < .05 ** p < .025 **p < .01 ***p < .001 (one-tailed)

Table 3.2: *Predictors of reading times: Simulation readers*
Partial correlations of story factors with reading times following regression analysis of first and second halves of story responses.

	sections 1-12 df 9	sections 13-23 df 8
Segments	.221	-.992***
Syllables	.374	.994***
Foregrounding	-.058	.997***
New arguments	.693***	-.994***
Time	-.692***	-.995***
Space	.463	-.995***
Cause	.665**	-.808***

*p < .05 **p < .025 **p < .01 ***p < .001 (one tailed)

[12] The finding on syllables, as expected, is positive on all counts: the longer the segment, the longer readers take to read it. This reality, it appears, was not altered by the structure of the text.

In the case of the other story elements the findings were also intriguing. Linear readers, on closer analysis, appeared largely to have ignored foregrounding; the principle influences for them (in the second half of the story only) were the situation model variables New Arguments, and Space. Simulation readers, on the other hand, showed a distinct and unusual profile. In the first half of the story they attended to all of the Situation Model components save shifts in time, which they appeared to actively disregard. In the second half of the story, at which point their reading speeds were notably increasing, the simulation readers' attention shifted dramatically away from the Situation Model features (as revealed by the series of negative correlations in the second column of Table 2 alongside New Arguments, Time, Space, and Causation) and toward foregrounding (the correlation here is strongly positive, $r(8) = .997, p < .01$).

Although the study sample was small, these results suggest that the differences between the two reading environments modified reader strategies in some important ways. For linear readers, the narrative structures indicated by the situation model variables appear to have played the predominant role in their responses, particularly in the second half of the story. Since these readers also ceased to read faster, this suggests an increasing reliance on construction of the situation model (i.e., New Arguments and Space) in order to frame their understanding. Simulation readers, in contrast, started by depending on situation model variables, and read without speeding up, but then appear to have abandoned their reliance on such features; attention to foregrounding, instead, became the predominant influence on reading, accompanied by a significant acceleration in the pace of reading. This suggests that they may have had trouble constructing the situation in the first instance, and when their efforts to do so failed, they began to skim the text, attending primarily to surface features such as stylistic foregrounding, and ceasing their attempts to integrate new information into their existing cognitive models of the story. Determining to what extent this picture of their reading strategies is correct, of course, entails an examination of participants' own observations about their reading experiences. In short, it is time to people the ruins.

Throng-noise

As noted earlier, reader response to "The Demon Lover" was comprised of two components: i. general comments on the experience of reading the text, and ii. reflections on striking or evocative imagery following the "remindings" method discussed earlier.[13] An initial review of the data revealed that all responses having to do with how the presentation of the story may have modified reader strategies occurred when readers were making their general comments prior to completing the remindings exercise. In fact, the more structured exercise of reviewing the story and commenting on striking or evocative passages, while perhaps helpful in studies focusing on how stylistic foregrounding modifies reader attention, was not immediately helpful in illuminating the question at hand: how might hypertext structures modify reader processes? For this reason, I resolved to set aside that portion of the commentary devoted to remindings for analysis in another context, and to focus this discussion, instead, on the readers' general comments.

An initial review of this data revealed that linear readers tended to remark more on content than form, and that they often neglected to make any observations of a more phenomenological nature about their reading experiences. For example, they remarked less frequently on their bodily experiences of reading the story on computer (i.e., whether the luminescence of the screen or the hum of the fan disturbed them, or whether they were troubled by the intangible nature of the text). In fact, although the length of their comments on striking or evocative passages was similar to that of the simulation readers, the comparative length of their general comments was much reduced—only a third of that generated by their counterparts. Apparently the linear version of "The Demon Lover" did not greatly challenge participants' reading strategies. Clicking on a "next key" is, after all, akin in many respects to turning a page. The direction of the text is taken as a given, and in consequence readers draw on their understandings of conventional narrative structures in order to build their knowledge of the situation. On the contrary, the simulation readers' comparative verbosity—about the medium, about their physical sense of themselves in relation to the text, about the narrative itself—clearly resulted because

[13] The pre-reading briefing and the instructions given readers for self-recording their commentaries are included in Appendix B.

the hypertext simulation *did* challenge their reading strategies, and they were anxious to voice their feelings in this regard.

Disorientation in the simulation

I hesitate to use the term disorientation because hypertext theorists have made no secret of the fact that they hold in contempt most examinations of disorientation in hypertext. As noted earlier, both Douglas (2000) and Bernstein (2000) dismiss such studies, as does Landow (1997), who observes that the "term remains unexamined and inadequately defined" (p. 115), and that the difference of opinion between "technological" and humanities researchers has resulted because the concept of disorientation in each of these disciplines differs greatly; while the former deem disorientation a barrier to communication, the latter "associate the general experience of disorientation with avant-garde, liberating, and culturally approved aesthetic experience" (p. 119). Thus it would appear that using the term to describe the simulation readers' troubles is to risk one of two things: dismissal, or branding as a non-literary pragmatist who fails to recognize the importance of disorientation as an artistic device.

I shall take these risks, for the striking and widespread bewilderment amongst simulation readers can only be described as disorientation according to the following definition: "a confused mental state . . . in which appreciation of one's spatial position, personal identity, and relations, or of the passage of time, is disturbed" (*OED*). In using this definition to describe the simulation readers' experiences, however, I do not wish to take up the topographical metaphor, to equate "The Demon Lover" to a geographical space in which readers became lost when they could no longer negotiate paths between so-called landmarks; rather, I wish to consider the notion of disorientation in relation to the reader's capacity to construct the narrative situation according to the model proposed by Zwaan et al. (1995).

Evident in the simulation readers' verbal responses to "The Demon Lover," then, was that the links disoriented them by disturbing their ability to make connections between propositions, and by disrupting their ability to make sense of the temporal, spatial and causal shifts in the narrative. They complained that the narrative was "choppy," "jumpy," that it "didn't flow," that there were "pieces missing," and so on.

The picture painted by the reading times data, it seems, was remarkably accurate: several readers were unable to construct the situation at all and, contrary to Landow's perception, they most certainly did not find this an aesthetically liberating experience. Observed one reader,

> Because I was sort of confused as to where the story was going, I was always thinking in the back of my mind, "Oh, maybe I should've chosen the other link because then I would have a better idea of where I was going . . . " Near the end it kind of made some sense, but, I don't know, not really. (S105)[14]

To establish the extent of disorientation amongst the readers, I produced a simple dichotomous scale indicating the presence or absence of reader disorientation in individual transcripts. Protocols were assigned a score of 0 if no sign of disorientation was evident, and a score of 1 otherwise. For example, linear protocol L110 was assigned a score of 1 because it contains statements such as the following: "I don't really like the piece split up by paragraphs because it kind of makes the story disjointed for me." This reader was one of only two members of the linear group who expressed any degree of confusion regarding the text's form or content. Considering her remark, it is difficult to determine whether the disjointedness of which she speaks is simply a reference to the fact that the electronic form upsets her notion of the aesthetics of literary text as a print construct, or whether she finds the presentation of "The Demon Lover" as a series of nodes disrupts in some degree the continuity of the narrative. It would seem the former, for although she complained that she found reading on screen annoying, and that the paragraphs didn't "blend in," her troubles were not so serious that she was unable to engage with the story, as she later indicates, "Generally, I enjoyed reading it. I was sort of caught by it—I wanted to see how it would end out and see how she would behave after she found that letter . . . " (L110).

The other linear reader to receive a score of 1 on the dichotomous scale was the only participant in the study who appeared to experience disorientation because she

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[14] Reader comments in this study and the next have been punctuated and non-essential utterances (such as "um") have been removed to ease readability. Otherwise, they are verbatim; no attempt has been made to correct colloquialisms or incorrect usage.

failed, in the words of Landow (1997), to "grasp the logic or even the meaning" of the text (p. 116). This third year undergraduate student with English as a first language complained repeatedly about "made up" words or incorrect usage—citing terms such as *troth, debouched,* and *tea* in the sense of a light afternoon meal. Regarding the last of these she protests, "it says she left the shop where she ate her solitary tea. Perhaps it's an English expression and eating tea makes sense but, otherwise, it doesn't make sense to me" (L122). She also found fault with the author's use of "deliberate alliteration [that's] just confusing" and was troubled because the text seemed "to want the reader to fill in the blanks." Ultimately, she dismissed the story as poorly written. While this is by no means an invalid response, it was clear that this reader's struggles were primarily related to content and not to form.

Conversely, the difficulties expressed by the simulation readers were more pervasive, leaving no question as to whether links upset their ability to make sense of the narrative, as the following three excerpts reveal:

> It was, at times, disorienting – jumping around from passage to passage. Sometimes it seemed like something was lost. (S112)
>
> The first comment I wanted to make about the hypertext reading is that I found it pretty choppy, like, I couldn't follow it completely. (S117)
>
> The story was very jumpy. I don't know if that was caused by the hypertext but I made choices and all of a sudden it wasn't flowing properly, it just kind of jumped to a new idea I didn't really follow. (S124)

Again, such protocols were assigned a 1 on the dichotomous scale. The completed scale revealed a highly significant difference between the two groups of readers: 75% of the simulation protocols contained evidence that readers were having difficulty with structure or presentation, compared with 10% of the linear transcripts. Although this simple scale is in some ways reductive because it does not reflect the range of experience evident in the transcripts (i.e., the nagging discomfort voiced by Participant L110 versus the more serious confusion voiced by Participant S124), it is useful because it allows for an examination of the relationship between the experience of disorientation and other

variables such as gender, age, education, subject major, favourite reading genre, time spent working with computers, time spent reading on screen, and computer expertise. On analysis, none of the factors save the presence or absence of links contributed significantly to reader experience of disorientation. This finding provided an important starting point for a more detailed examination of the transcript material in which a number of themes emerged.

Misplacing the text

Their sense that there were several narrative possibilities clearly made it difficult for simulation readers to engage with the story. Some participants in this group felt their confusion about the narrative resulted because they had made poor choices and in consequence had not read a "flowing" version of the text. This is evident in reader S105's response cited earlier. (Recall that this reader was plagued by the nagging doubt that he would have had a "better idea of where [he] was going" had he selected different links.) Others took this notion a step further, surmising that the story did not make sense because they had bypassed important details that possibly lay along other routes:

> [I wondered] whether I was missing a particularly juicy or interesting bit of dialogue or action. (S122)
>
> [The hypertext] made it a little difficult sometimes to fill in the gaps. It almost seemed like there were bits of information that were missing (S113).

Similar feelings were expressed either explicitly or obliquely by several readers, many of whom spoke of "gaps," "jumps," and "lost" portions of text.

Interestingly, the second of the readers cited above, S113, was the only one of the simulation group who found the apparent disconnectedness of the text an enjoyable challenge. Like Douglas's students who (in Moulthrop's estimation) plotted their readings, he treated the story as though it were a puzzle to be solved—successful sleuthing beneath the table for the mandatory misplaced pieces was merely part of the game. Thus, after stating that he had difficulty following the narrative because bits of the text appeared to be lost, he hastened to add that he overcame this problem through perseverance: "but I was able to put the puzzle together, so to speak, was able to figure

out what was going on just from the action and the dialogue in the story" (S113). Noteworthy in this response is that he apparently does not "find" his misplaced pieces, but instead infers what is not there from what is there.

This reading process approximates that described by theorists such as Iser (1978 and 1980). Those inevitable spaces in the logical sequence of the narrative into which we read our own understandings are, at least in part, what allow us to engage in personally meaningful interactions with literary texts. S113's response is remarkable, then, not because he engages in the process of inference—something that all readers must do—but because he recognises that this is what he is doing. One effect of the way in which the simulation made explicit the structure of the text, then, is that it may have made some readers more cognisant of the essential discontinuity of the text and of their own involvement in constructing it in the process of reading. And yet, simultaneously—in fact, more commonly than not, if we consider the number of readers who found the text disjointed or disorienting—it appears to have prevented readers from engaging the text on a personal level by interfering with their ability to "put the puzzle together" by filling in gaps where necessary as this solitary reader indicates that he was able to do. Instead, readers appeared to be waiting for the text to provide information I suppose they might otherwise have extrapolated on their own, and when that information failed to materialise on screen, several assumed they had missed a pertinent section of the story. This feeling is evidenced in the majority of the statements cited on the preceding pages (i.e., in the commentary of readers S112, S117, S124, and S113).

Experiencing links as gaps

Many participants who read the simulation thus struggled in making or building connections. At least one such reader found the text awkward because her expectations of where the links might lead did not always correspond with the progression of the narrative:

> I found the links, like from one paragraph to the next, didn't really carry over to me. It almost didn't flow from what I had just read. I don't know if that was something I had just missed,

> but I thought there could have been a little bit better connections for some of them. (S104)[15]

This remark verifies Dobrin's (1994) assessment regarding the potential problem with network linking.

Others gave up entirely in their efforts to envisage the text as a unified piece, resolving instead that the simulation must be a montage of two or more different texts. This response is evident in Participant S105's statement: "It seemed disjointed to me at times just because it seemed that there were two different stories going on, and then there was this whole other part where all of a sudden the text just changed." This sentiment is also evident in the following lengthy commentary, which gives a sense of how the fifteen participants who described the story as choppy or disjointed may have experienced links:

> Since there [are] so many different combinations, it isn't necessarily free flowing . . . There were parts where it would describe exactly what she was doing in the bedroom with the weather outside and what she was thinking and how she was feeling and then, all of a sudden, if you clicked on the right word, it would flashback to her original meeting with the soldier or whomever the person was, and that was weird to me just because it seemed then to be like two different consciousnesses. I mean, at one point you are in the present time with the woman and she was in her abandoned house and then suddenly she was a girl again—presumably a teenage girl—meeting with a soldier before he went off to war, and then she was racing across the lawn with her mother and sister inside the same house, and then flashback to the present when she was alone in the house. You know, it's a very interesting way of presenting it. But it was weird how the mood went from kind of dark to a little bit lighter [inaudible], but then suddenly

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[15] This, as noted earlier, is a risk in any literary hypertext with embedded links. The author's associations are not those of the reader—even when the text is native hyperfiction. (In fact, on this score it was somewhat surprising that participant S104 was the only reader who explicitly stated that the link paths did not always meet her expectations.)

> it went back to dark again at the very end. That was very surprising and very strange to me, just in that it was very abrupt. Some of the passages were extremely abrupt—and all of a sudden she's in this taxi and, *boom*, she's being taken away. (S126)

Like the previous reader, this student—I shall call him Vince—surmised the story might be a combination of different texts, or "consciousnesses," to use his term. His commentary is particularly interesting because the transitions in his own discussion mirror his experience of the links in the simulation: suddenly, flashback, *boom*. He emphasises the jarring nature of the temporal shifts from present to past, eventually characterizing even the imagery as unexpectedly changing.

This is remarkable because "The Demon Lover" is in fact a chronological story with only one flashback, a transition that the linear readers had no difficulty following, as is evident in the following observation, "It was a good story—well written. It had an excellent sense of description that created very powerful imagery. I felt that the story itself was well done as a plot. The flashback was at the right moment" (L102). Two others in the linear group even complained that the story was *too* obvious. For one, the text "stopped being evocative" when the tone became disturbing because he "knew what was coming in a general sense" (L128); while the second, similarly, remarked that the title "made the ending obvious" (L110).

Vince's confusion is also noteworthy because his strong critical and recreational reading background coupled with his considerable experience with computers made him perhaps the least likely of the simulation readers to be mired by the hypertext presentation. Enrolled in first-year law with a background in both the humanities and the sciences, this twenty-two year old's list of recent pleasure reading included a range of genres: popular novels, classical poetic epics, early modern drama, and philosophical-political commentary. His personal daily computer usage was between two and four hours, and at least half of that time involved reading online essays, news and magazines located through the Internet.[16] He rated himself an expert computer user (one of only two

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[16] This figure does not include work-based computer use. Given that Vince's summer job also involved computer use, we may assume that the time he spent reading on screen on a daily basis was in fact much higher.

simulation readers to do so), a self-evaluation that was verified by his knowledge of numerous software applications and innovative online humanities archives such as the Perseus Project at Tufts.

In spite of his familiarity with hypertext, Vince's troubles with "The Demon Lover" appeared to stem from his experience of the links as gaps. The act of breaking off from reading, considering between different choices, projecting, in that moment of consideration, various possibilities for the narrative that may or may not be met upon selecting a given link—all of these things served to heighten his awareness of the natural breaks in the logical progression of the text to the extent that even relatively seamless segments appeared to him disjointed. He found, for example, the spatial shift from the house to the taxi "sudden," and yet, this transition is not in fact abrupt. Mrs. Drover "lets herself out by inches from her own front door into the empty street," and makes "her way towards the thoroughfare and the taxi." Her emotions and her movements from one place to the other are detailed in two lengthy nodes. Even the moment when she grasps the handle of the car door is described. To find her movement from the house to the taxi sudden, one would have to skip over the contents of Node 22 and most of Node 23, something that it appears Vince may have done, even in retracing his path to make his comments. His description of the last four nodes of the text focuses, instead, on two moments: Mrs. Drover's "sudden" appearance in the taxi, and the moment she is "taken away." Interestingly, were we to "read" only the linked transitions in the last four nodes of the story, we would discover a text resembling what Vince describes: i. Mrs. Drover exits the house; ii. she steps onto the square across which is the taxi stand; iii. she meets the taxi driver's eyes momentarily before he accelerates off into the unknown. Or, in Vince's words, "all of a sudden she's in this taxi and, *boom*, she's being taken away."

The process revealed in this response suggests that more was at play in readers' experience of disorientation than their inability to follow the connections between link words and the nodes to which they led, or their difficulty in seeing coherence through a field of temporal rifts (linking moments). On the contrary, it appears the gaps, or "jumps," to which several readers referred may have resulted in part because they were skimming, or certainly not retaining in memory, important sections of the text. The following two readers' responses support this assessment, and give voice to the finding

on reading times that simulation readers began to speed up unusually in the second half of the story:

> At times I wanted to just jump ahead and pick a link before finishing the entire contents of the paragraph on the particular page at that moment. (S104)
>
> I wanted to go really fast, like I wanted to click, click, click, and it's a good thing that they reminded us to make sure we read it all because there were a couple times I did miss a few of the words, like the last couple words. (S106)

Hypertext and the heightening of suspense

The desire to progressively increase the speed of reading was accompanied, not surprisingly, by a heightened sense of suspense among simulation readers. In fact, aside from the experience of the text as incomplete or disjointed, this was the most noticeable difference between the verbal commentary of the two groups of readers. Almost half, nine, of the simulation readers remarked that the story was suspenseful while only one linear reader expressed the same sentiment. This feeling amongst simulation readers was often coupled, as the responses above and the one following suggest, with a desire to read more quickly than usual:

> I also quite liked the tension and the suspense that was built throughout the story. It made it almost electrifying—the fact that you didn't know what was going to happen and you knew that something "not right" was going on, but you weren't sure what. And it made you really want to push, and I found that the further I got along in the story, the faster I was reading. (S113)

Although "The Demon Lover" is clearly a suspenseful story in its own right, the simulation format appears to have exaggerated this feature of the text and to have effected agitation amongst readers, a feeling that intensified as the story progressed.

Interestingly, the sole linear reader who remarked on suspense made the most revealing comment regarding what may have prompted this response. This reader lamented the absence of certain comforts we have come to associate with print text (i.e.,

portability), but otherwise approved of the electronic format specifically because it increased tension:

> The good thing is having to read just a chunk of passage and then click to continue on—it just adds some tension to the plot because [there are] such short passages and it creates a little climax at the end of each paragraph. (L106)

Here she suggests that the effect of breaking up the text is somewhat akin to the effect created by serial novels or movies in which the pseudo-climaxes at the end of each episode drive readers or viewers eagerly to seek out the next instalment. Thus, the electronic form apparently focussed her attention on plot (the unfolding of an exciting sequence of events) over other features of the narrative (for example, the detailed descriptions of a defeated, war-worn London). For simulation readers, who commented on suspense and expressed agitation with significantly greater frequency than did linear readers, the added feature of embedded multiple links clearly intensified this focus.[17]

Choice of links

Link choices and the Literary Response Questionnaire (LRQ) were the final data sources for Study I. As noted earlier, the links in the simulation reflected one of three story elements: plot, character, or stylistic foregrounding. After omitting two nodes in which only two choices were present, I calculated the frequency of link choice for each type of link. Not surprisingly, readers showed a strong preference for plot links (see Table 3), a finding that supports the evidence in the transcript data that the simulation prompted a story-driven form of reading by bringing into question the sequence of events.

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[17] A number of simulation readers, 20%, also equated reading "The Demon Lover" with their childhood experiences reading the text-based game series, *Choose Your Own Adventure*. This is an action-filled participatory genre in which young people advance the story by choosing from among various options for the protagonist. Again, the series encourages a focus on reading for plot over, say, reading for personal insight; this is likely one reason that young people quickly outgrow the genre. Observes one simulation reader, who disliked the hypertext form, "when I was a young kid, I enjoyed [*Choose Your Own Adventure*], but then, after a while, I didn't want to make those choices . . . I prefer a straight passage where the author provides his or her own story as opposed to a reader guessing what should happen" (S101).

Table 3.3: *Frequency of link choice*

Frequencies were calculated after omitting segments 15 and 19, the two nodes in which only two choices were available.

	Frequency per segment	Total	Percent
Plot	7.9	165	**39**
Character	5.6	118	**28**
Foregrounding	6.6	139	**33**

The transcripts, however, were not particularly helpful in providing any greater insight than this into what may have prompted readers to make the choices they did. Although most participants, 60%, remarked in some capacity about the experience of choosing between links, many did not detail their basis for selection or were vague or ambiguous about their motivations. For example, the following reader appears to express a preference for foregrounded links, but then reveals that the words he "likes" are those that suggest action or adventure: "I chose passages because I liked the words that were highlighted. So I kind of chose the words that I liked more, like certain words that seemed to provide more action or adventure" (S108). His profile of link choice, on the other hand, appears to contradict his last remark, revealing that he in fact did select foregrounded links more frequently than plot links (he was also one of only three readers who avoided character links almost entirely).

To provide greater insight into what factors may have influenced link choice, therefore, the frequencies of different types of links chosen by participants were analysed and correlated with participants' age, gender, and LRQ scores on each factor (see Table 4). (Recall that the LRQ, or Literary Response Questionnaire, measures readers' stated preferences with respect to seven independent factors: i. insight ii. empathy, iii. imagery vividness, iv. leisure escape, v. concern with the author, vi. story-driven reading, vii. rejecting literary values [see page 89].)

Table 3.4: *Individual data*

Frequency of different types of links chosen by participants, correlated with LRQ factors (df 18)

	Plot	Char	Fore
Age	-.254	.444**	-.275
Sex[1]	-.639****	.517***	-.022
Leisure	.134	.256	-.401*
Story	.523***	-.133	-.306
Insight	.041	.063	-.105
Empathy	.243	.070	-.289
Author	-.019	.049	-.038
Imagery	.080	.359	-.471**
Reject	.406**	-.323	.009

*p < .1 **p < .05 ***p < .02 ****p < .01

[1] Point-biserial correlations

This analysis revealed some trends that might be expected. Plot links were chosen by those high in story-driven reading and in rejection of literature. They were also chosen significantly more often by males. Character links, in contrast, were strongly preferred by older participants and by females. A significant negative correlation was also noted between the choice of foregrounded links and imagery vividness. This last is surprising, for unlike the other correlations, it is the opposite of what might be predicted. Possibly, the disorientation experienced by some simulation readers caused them to steer away from foregrounded links—even if these links were of great interest to them—in the hopes of effecting increased coherence in what they perceived to be a disjointed text. Participant S102 noted a dilemma of this kind:

> [The story] was pretty good except that it was confusing when certain things were highlighted to know which one to pick. Like you thought that well, if I don't pick this particular one, I may miss out on a part of the story that I'm really interested in, or, if I pick this one, then maybe I'll get to the really interesting part, or, I'd like to know more about this person

> but I also want to know what's going to happen in the plot. So it was hard to sort of know which would be best to choose sometimes because . . . I would like to know more about the characters but I also like to know the plot's advancing.

The LRQ is an instrument designed for assessing response to printed texts, and as such it may be less effective in predicting the type of links chosen by hypertext readers (several factors, for example, showed no relation to link choice whatsoever). Nevertheless, this last finding suggests that possibly the simulation disrupted some readers' strategies—particularly the strategies of those inclined to be attentive to the literary qualities of texts—more than others.

Circling back

This preliminary study shows that the structural difference between the linear and simulated self-navigating electronic text environments did cause readers to modify their reading strategies in some important ways. Linear readers appear to have relied more heavily on situation model variables in framing their understanding, while simulation readers appear to have abandoned this strategy in the course of reading. Their attention to foregrounding, coupled with their progressively increased reading speeds, suggests that their attention was diverted to the surface features of the text, and that their reading patterns became increasingly fragmented as the story progressed. The readers' commentary supported these findings, and provided interesting insight as to "what goes on behind the screen." Perhaps, then, it is time to return to the question left unanswered by a review of hypertext theory: "By promoting reader participation, does hypertext leave more room for the reader, thereby facilitating the process of self-conceptualisation better than does print text?" Although the simulation is only an approximation of hypertext that cannot offer to model features associated with particular designs, the response of the readers in Study I suggests that the sort of engagement promoted by choosing between links tends to preclude a more personal level of response, and in consequence distances readers from the text.

Study II: "The Trout"

To determine whether the results of Study I might arise again in another setting, I replicated the procedure, with certain modifications, with sixty readers of a different short story. Two primary goals of this second study were to solicit more extensive verbal commentary from the readers and to devise a more rigorous methodology for analysis of this commentary that would both reveal the diversity of the response and allow for rich discussion of dominant themes.

Participants

Participants in Study II were mostly first-year undergraduates enrolled in a junior-level psychology course at a major Canadian university. They ranged in age between 17 and 27, but the vast majority, 86%, were less than twenty years of age. Due to the demographics of the pool of students from which participants were drawn, 88% of the readers in this study were female. Although the lack of diversity in the sample with respect to age and the marked disproportion in terms of gender prevented exploration of certain issues, the procedural modifications discussed below were effective in generating rich verbal commentary that illuminated in what ways the processes of the simulation readers differed from those of the linear readers.

Procedural modifications

"The Trout" study procedure mirrored that of Study I with two exceptions. First, the Reading and Computer Usage Questionnaire (RCUQ) was modified slightly for the sake of clarity (see Appendix C). For example, "age" was altered to "year of birth," and rankings in several categories were changed to ratings because some participants in the pilot study were uncertain how to rank activities in which they did not engage. Second, the process of collecting self-recorded commentary was altered. In the first study,

participant instructions relating to commenting on the experience of reading the text were made purposefully spare in order to avoid influencing response through over-direction. Readers were asked to be guided by their own interests in speaking about their reading experiences and then to remark on the passages they had noted as striking or evocative in the course of reviewing the text (see Appendix B). Unfortunately, this procedure had the unwanted effect of curtailing general commentary on the experience of reading the story (wherein the majority of remarks having to do with structure and link choice were made) by directing participants' focus to the more structured exercise of remarking on noted passages. In fact, three readers jumped to the final exercise without making general comments about their reading experiences at all. In an effort to avoid a similar reaction, "The Trout" study reader instructions were made more extensive, and the formal process of commenting on noted passages was incorporated into the overall response.

Thus, the linear readers were given the following directions as prompts, but were reminded that they were not bound to comment only, or even at all, on these things:

> While reading, when did something strike you as evocative or meaningful? (In responding to this question, you might think of one or more moments when perhaps you slowed down, paused, had another thought come to mind, felt emotionally touched, and so on.)
>
> - What specifically struck you about the moment(s) you have identified?
> - What were you reminded of?
> - How or what did you feel?
> - Is there anything else that might distinguish this moment?
>
> Now focus on your experience of reading this text on computer.
>
> - How would you compare this reading experience to others you have had?
> - During reading, what physical or spatial sense did you have of your person or of the text?

- What mood or feeling was evoked as a result of moving through the text by activating links? Can you point to a specific example?

Only two points were added to the second cluster of questions in the instructions given the simulation readers: i. What was it like to choose between links? ii. In specific instances, what prompted you to make the choices you did?[1] Otherwise, the document was identical for both groups. Providing this more detailed set of prompts evoked extensive and rich commentary from readers in both conditions.

The procedure in its entirety took approximately one hour, with no more than three readers participating at one time. Each was assigned to a separate room where they completed the LRQ and the RCUQ in about twenty minutes, read the story in about ten, and most often made their comments in fifteen to twenty minutes. Although they were encouraged to respond for as long as they wished, only one reader spent more than thirty minutes self-recording her comments.

The text

Participants in Study II read Sean O'Faolain's "The Trout," a story that, in contrast to the "Demon Lover," bears the stylistic markers of the fairy-tale. This text is replete with simple—almost childlike—constructions that at times belie the complexity of the narrative. Twelve-year-old Julia is portrayed as a precocious young girl who is beginning to question her parents' moralistic responses to her queries about the world. While exploring the wooded garden of her family's summer retreat, she discovers a well and, trapped within a small pool of evaporating water, a live trout. Distressed by its predicament and by the indifference of those around her, she plans and executes the trout's rescue. Her midnight action constitutes a rite of passage that, the story implies, frees her from the gullibility of early childhood years.

"The Trout," shorter by half than the "Demon Lover" (approximately 1500 as opposed to 3000 words), consisted of only 10 nodes, some of which combined two or more paragraphs (M = 101 words; R = 39-195). Otherwise, the presentation of the text

[1] See Appendix D for the "Trout Study" reader briefing and complete instructions.

was identical to that in Study I: linear readers activated a "next" link; simulation readers selected one of three embedded links that were representative of the different story aspects discussed earlier, plot, character, and foregrounding. All nodes contained these three types of link. As before, readers were unable to click on a back link or reverse their reading, and, as before, this constitutes both a weakness and strength of the design.

The second story was selected for a number of reasons. Like the "Demon Lover," it had been used in previous reader-response research and in consequence was coded for both stylistic foregrounding and situation model variables (Zwaan et al., 1995; Miall & Kuiken, 1994a; Miall & Kuiken 1994b). This enabled the examination of reader response from the perspectives of established theories of reading. Further, in spite of the fact that Bowen and O'Faolain were contemporaries and compatriots—even close friends—their writing is stylistically and topically very different. Readers who struggled with the complex structure of Bowen's sentences, or with her sophisticated and, to a contemporary audience, sometimes dated usage, would be unlikely to struggle in the same way with O'Faolain's relatively straightforward language. The subject of "The Trout" also transcends time and, in some respects, place: none of the sixty readers who commented on the story remarked that they could not relate to the protagonist's actions—nor that they were distanced by the setting, as were some readers by the wartime London locale of the "Demon Lover."

Landow (1997) suggests that some empirical researchers may mistake reader difficulties with content for reader difficulties with form (p. 116). Taking into consideration this criticism, the selection of two stories that are substantially different in both style and content was made in an effort to determine whether the modification of reading strategies evident among simulation readers in Study I would persist among a second group reading a dissimilar text. If so, we may with confidence conclude that form, and not content, is the primary factor contributing to this effect.

Study II Results

Reading times

As in Study I, several different kinds of data were considered, including reading times, self-recorded commentary, and choice of links. Reading times per segment were analysed first to determine if the two groups of readers differed. Remarkably, calculating the mean reading speed revealed an *identical* result in terms of the difference between the two groups to that obtained in Study I: readers of the simulation version of "The Trout" took longer —7.79 seconds longer on average—to read each node (linear: M = 45.13 secs; hypertext: M = 52.92), a significant difference, $t(9) = 12.438$, $p < .001$. While the extended reading time among simulation readers in both studies is expected, undoubtedly resulting from the added seconds taken to choose between links, it is interesting that readers are apparently rather predictable about the amount of time they take to assess their choices and to make a selection. (This being said, it is also worth noting here that some of the added processing time for simulation readers of "The Trout" might have resulted because they, like the readers in the first study, struggled to make sense of a narrative that they often found disjointed. As one reader observes, "Sometimes I felt that the story kind of jumped, and I found myself having to go back and read a sentence twice just to understand it" [S318].)

Again, to ascertain what role was played by the situation model, foregrounding, and other story factors in reading, regression analyses for the two groups of readers were carried out with reading time as the dependent variable. This model, as before, also included the independent sources of influence on reading times, section position and number of syllables per section. The influence of individual variables on reading speed was then examined in order to determine what differences occurred between the two groups of readers. In the following table, partial correlations enable the influence of each independent variable on reading times to be considered separately.

Table 3.5: *Predictors of reading times: Partial correlations of story factors with reading times following regression analysis*

df 8	Linear	Simulation
Syllables	.773***	-.680**
Segments	-.792***	.879***
Foregrounding	.958***	.961***
New arguments	.063	.955***
Time	.107	-.929***
Space	.742***	.953***
Cause	-.319	.934***

*p < .05 ** p < .025 ***p < .001 (one-tailed)

This analysis yielded some interesting results that were not entirely reflective of those obtained in the first study. First, the syllables finding shows a correlation of the number of syllables per segment with the amount of time taken to read each segment. As noted earlier, one would expect to find a high correlation between these two factors: longer segments should take longer to read. This is indeed true for linear readers, but not for simulation readers, for whom the strong negative correlation, $r(8) = -.680$, $p < .025$, shows a tendency, oddly, to speed up in longer sections. Possibly this curious finding resulted because simulation readers were hurrying over longer segments, impatient to continue by choosing a link. Certainly this appeared to be the case in Study I; recall, for example, the distinctive remarks of readers who wanted to "click, click, click," and to "jump ahead and pick a link before finishing the contents of the paragraph." Although "The Trout" readers were not as expressive in this regard, they nevertheless commented that they too were "anxious to see what came next" (S311) and at times felt "kind of rushed to read the text" (S326).

The second row of the table, "segments," shows the correlation of segment position (i.e., where in the story—beginning, middle, or end—the segment is located) with reading times. Recall that a positive correlation would indicate a tendency for lower

segment position numbers to appear alongside lower reading time numbers and for higher segment position numbers to appear alongside higher reading time numbers, while a negative correlation indicates the opposite. The negative correlation, as discussed previously, is expected because readers tend to begin slowly and to accelerate only after they have constructed the situation. Here we find that for linear readers the expected is true: partial correlation of reading times and segment position is strongly negative, $r(8) = -.792$, $p < .01$. Oddly, however, this is reversed for simulation readers, $r(8) = .879$, $p < .01$, suggesting that they slowed down as the story progressed. While this finding on segment position and reading time initially appears to contradict that of Study I, taking into consideration the length of the two texts reveals that the readers in fact behaved similarly in both studies. In the first half of "The Demon Lover" (which is twelve nodes long), simulation readers also slowed slightly. Their tendency to speed up did not occur until the second half of the story, at which point it became clear that they had abandoned the situation model and were instead casting about for another way of orienting to the text. Apparently the simulation readers of "The Trout," which is nine nodes in total, also struggled at first. As one simulation reader observed,

> When moving through the text by activating links, I was a little bit confused. I felt as though it didn't completely make sense, different paragraphs with each other. It was difficult to follow the story. I felt like I had, I was reading a book with pages ripped out, or something; in that I got the general sense of the story—the plot, I guess you could say—but specific experiences of the characters didn't make sense . . . I didn't understand until I was about half way through . . . So I was very confused for a while. (S314)

Although this reader states here that she began to make sense of things "halfway through," she later confessed to being generally baffled by the story, "I didn't really understand what was going on." Had the text been longer, perhaps "The Trout" simulation readers also would have exhibited the behaviour shown by the "Demon Lover" readers in the second half of the story.

The other correlations shown in Table 5 express the relation between reading times and foregrounding, and between reading times and the Situation Model variables according to the same method of analysis employed in Study I. Both groups were highly influenced by foregrounding: the strong positive correlation demonstrates that they slowed while reading nodes containing a number of foregrounded segments. This might be expected in the case of "The Trout" given that of the two stories it is particularly rich in striking imagery. Regarding the Situation Model components, linear readers were most attentive to shifts in space, while simulation readers attended to all the attributes of the model save Time. The strongly negative correlation between reading times and this last factor, $r(8) = -.929$, $p < .01$, shows that simulation readers tended to read segments containing temporal shifts more quickly, indicating that they were disregarding temporal shifts. Again, this reflects the findings of Study I: the "Demon Lover" simulation readers showed a similar strong negative correlation on this feature across the story. Since narrative primarily unfolds in time, we might speculate that any difficulties participants had making sense of the story would first be manifested through an inability to encode shifts in time. Statements from both studies about the "choppy," "disjointed," or "jumpy" nature of the text support this assessment and demonstrate how readers may have struggled with temporal shifts, as does reader S302's remarkable observation that she felt she was "starting again" following every link:

> I don't like actively, the activating links because it's, you can't, it's not a flowing—I don't find it a flowing story. But, and it, it's like you're starting again, like a whole new story at the beginning of each page . . . It makes you almost feel like, you know, it cuts off. You might have had feelings about the first page, but you have to go to a brand new page so it's like you're starting all over again. (S302)

Transcript analysis

Before discussing reader commentary, I should pause to describe how the method of interpretation employed in this study differed from that employed in the first. Transcript analysis in Study I involved the formal process of determining the extent of disorientation through the use of a dichotomous scale, and the more qualitative approach of drawing out and remarking upon thematic trends evident across reader commentaries. The first of these methods was useful for determining the disposition of the group, but was in some ways reductive because it glossed over the diversity of experience evident within the data set; the second method, similarly, expanded certain themes over others, and thus it too was less comprehensive than it might have been. While this was nevertheless a reasonable approach for the first study given the preliminary nature of the research, the extensive and complex character of the commentary in the second study demanded something more rigorous. Ultimately, I sought to develop a methodology that would allow me both to present a fairly accurate picture of the diversity of response and to take up particular themes in a systematic fashion.

Bearing these goals in mind, I first coded the protocols exhaustively for different features, or constituents, of experience. Altogether, seventy-six features were identified, reflecting ten categories of response that I shall discuss shortly (see Appendix E). Complexity codes rating the degree of sophistication evident in each protocol were also assigned. A code of 1 denoted responses that were superficial, brief, and in which statements were most often general with little reference made to the text; a code of 2 denoted responses in which ideas were elaborated, and in which *some* specific references to the text and to memories and feelings prompted by the reading experience were made; a code of 3 denoted protocols in which ideas were elaborated *extensively,* and in which *multiple* specific references to the text and to memories and feelings prompted by the reading experience were made.

Tags reflecting each of these features were embedded in the transcripts to enable electronic searching using the text analysis software, *Concordance*. What follows is a segment (less than one tenth) of a coded simulation protocol:

[R S310] [complexity3]
[foregrounding] [imagery] The things that specifically struck me were words like shimmery, moonlit, and lots of different adjectives and adverbs that helped to describe the story better. The way they described the, the trees and the river, and the dark walk, and things like that helped me to bring perspective. *[autobio-general]* It kind of reminded me of where I used to live in British Columbia where there was lots of trees, and the moon would be out, and it would light up the area where you were walking, and you could see water and river coming down. *[readeremotion]* It helps me to feel quiet, I guess, to be, be as if I was alone, to be able to think, *[involvement+]* and look around at the landscape, and see the story unfolding as if I was there but not really there.

As is evident here, the tags were simply markers within the text. They did not bracket information (i.e., there were no tags demarcating the end of particular features). In some cases they were also applied multiply to a single statement, as in the case of the first sentence of the above protocol.

The transcripts, thus marked up, were submitted to *Concordance* as two documents, the first containing all linear protocols, and the second containing all simulation protocols. Reference tags, which headed all protocols, facilitated searching by allowing *Concordance* to display headwords both by line number and by protocol number. Thus, searching for [foregrounding] in the linear document returned a list of the four instances of the tag in the linear transcripts as displayed in Table 6.

Table 3.6: *Concordance output for the search term [foregrounding] in the linear protocols*

Context	Word	Context	Line	Ref
Therefore when I hear that she found . . .	[foregrounding]	The items in . . .	20	L301
Repeated it a lot, or when there was . . .	[foregrounding]	I liked on . . .	323	L314
Very important, and she, she conside . . .	[foregrounding]	[visual]	712	L327
Find, and everything. [readeremotion]	[foregrounding]	One other . . .	716	L327

The *Concordance* output, as is evident here, shows the overall frequency of the feature in question as well as the protocols in which it occurs. The preceding table consequently reveals that only three readers in the linear group commented on foregrounding; one did so twice. Thus, *Concordance* provided quick and accurate frequency counts and enabled immediate access to the features in context.

As mentioned above, the seventy-six features, or constituents, were divided among ten categories of experience. In some clusters features were further categorised into subsets, generally reflecting differing emotional response within particular constituents. For example, the "links" feature occurred in the tag set in three forms: links, links+, links-. The first of these denoted a neutral statement about links, the second a positive statement, and the third a negative statement. The constituent categories and subsets, as well as a brief description of each, are outlined in Table 7; more detailed discussion of each feature is incorporated in the results section.

Table 3.7: Categories of reader response

Category	Subset	Description
1. Interpretive and observational	None	Interpretation (thematic, symbolic, et cetera); observation (i.e., of character)
2. Response to style	None	Response to style (i.e., foregrounding, diction)
3. Imagery and visualization	None	Allusions to imagery, visualization of setting
4. Self of reader	a. Self of reader reinforced b. Self of reader repressed	Personal involvement, or lack thereof, with the text
5. Body	None	Notes physical engagement, or lack thereof, in the reading process
6. Story	a. Structure, difficulties with b. Structure, no difficulty with c. Narrative, approves of d. Narrative, disapproves of e. Story, other	Discussion of structure, plot, suspense, etc
7. Reader pace	None	Discusses personal reading speed
8. Links	a. Links, positive b. Links, negative c. Links, neutral d. Link choice, reasons for	Comments having to do with the process of choosing between links
9. Computer reading	a. Computer reading, positive b. Computer reading, negative c. Computer reading, neutral	Addresses computer reading
10. Experimental design	None	Comments on the experimental design
11. Other	None	Reference codes, complexity codes [explained below]

Throng-noise, again

Complexity of response

As stated earlier, complexity codes were assigned to individual protocols. According to this method of measuring the sophistication of response, it would appear the format of the text (i.e., linear or simulation) did not greatly change the quality of reader commentary (see Figure 6).

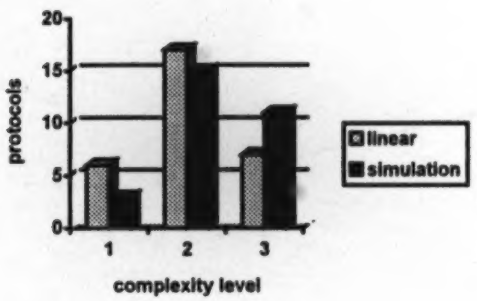

Figure 3.5: *Complexity level in linear and simulation protocols*

The simulation group of readers scored slightly higher overall, which reflects the trend revealed in Study I (recall that simulation reader commentary was far more extensive), but the difference in this instance was not significant. Notable disparities between the groups instead became evident upon analysis of the distribution of the seventy-six constituent features. In the following discussion of reader commentary, I shall consider each of the constituent categories in the order they appear in Table 7.

Interpretation and observation

Category I included all features related to reader analysis of the text on a critical level. Comments in this cluster reflected in many ways the early formal literary training (middle and high school) of the group of students participating in the study. Such statements included remarks about language, theme, and symbolism. For example, one reader mused about whether "The Trout" is a "coming of age" story (S302); another

raised the possibility that Julia is "the saviour" of the fish (L321); and a third pointed out the role reversal between Julia and her mother at the end of the story:

> At the end when the main character said that she was like a fairy godmother related to the previous part in the story where she was 12, and she had outgrown those sorts of things—Santa Claus. It was then sort of interesting that she would choose such an approach to explain to her brother what happened to the fish instead of just saying, "I saved it." (L301)

All of these comments represent readers' efforts to contextualise the story within their own frameworks of literary knowledge. The first categorises the story as belonging to a genre with which she is clearly familiar, the second determines which archetypal role might best fit Julia, and the third demonstrates her awareness of patterns of character development. In addition, this constituent category included a subset of three additional features that were deemed objective forms of response: allusion, observation of character emotion, and deliberation over particulars of the narrative (the "question" feature in Appendix E).

The total occurrence of features in this category was remarkably similar in both groups of readers (linear: 34; simulation: 35); and the frequency of the three objective features mentioned above also remained constant across both groups (linear: 18; simulation 19).[2] These findings suggest that the difference in presentation mode had little effect on readers' tendencies or abilities to make commentaries of a critical or observational nature about the text.

The inward eye/I: "Response to style" and "Imagery and visualisation"

Marked differences between the groups of readers began to reveal themselves in constituent categories that reflected a personal level of involvement with the text, such as clusters 2 and 3: "Response to style" (i.e., foregrounding, defamiliarisation, diction and dialect), and "Imagery and visualisation." The distinction between these two clusters, which might appear very similar on first examination, is a matter of specificity: Category

---

[2] Frequencies have been combined in this instance because no notable differences were observed in the occurrence of particular features in this Category. For a table showing individual constituent frequencies see Appendix F.

2 includes only remarks made in response to particular foregrounded passages; Category 3 includes more general comments about imagery and about visualisation of the text. Consider, for example, the following response:

> They described the trout, the panting trout. It almost made me feel sorry for him. It's just like he was suffering, and they described the silver stomach and how he, he was just, I don't know. (L327)

This reader comment has been assigned three tags: "imagery," "foregrounding," and "reader emotion," each a feature within a different constituent category. The presence of the last tag, "reader emotion," needs no explication. Otherwise, the first tag, "imagery," flags the general reference to the panting trout, a description that appears more than once in the story; and the second tag, "foregrounding," is included because the reader has specifically cited the following foregrounded passage in her use of the descriptor "silver stomach":

> She rushed for Stephen and dragged him to see, and they were both so excited that they were no longer afraid of the darkness as they hunched down and peered in at the fish panting in his tiny prison, his *silver stomach* going up and down like an engine. [italics mine] (p. 384)

In this instance the distinction between imagery and foregrounding begins to blur—perhaps the reader's reference to the panting trout is also specific to this passage—but in most cases, the more generalised imagery feature was easily distinguished: "I liked the imagery at the beginning of the story. It let me visualise the scene in my mind" (S319). Nevertheless, because the two categories understandably overlap, in some cases comments that appeared in one also appeared in the other, as we have just seen.

Defamiliarisation, the other feature that warrants commenting on here, referred to a specific response to a foregrounded passage. Recall that defamiliarization as described by Miall and Kuiken (1994a) is typical of reader response to highly foregrounded language. Readers of "The Trout" at times described this behaviour when they spoke of slowing to take account of what they had just read, when they remarked that an image

was "odd" or "curious," or when they puzzled over possible interpretations. An example follows:

> The phrase, moon mice on the water, I have no idea what exactly that means. I can't figure out how to tie in mice with the moon unless it's something to do with the moon being full of cheese, but I really like that phrase. It, it, I guess partially because it was something different—I mean, you don't normally connect mice with the moon. That made me stop at it and go, *whoa*—which was odd, especially since that was a section where I was speeding right along trying to find out exactly what would happen. (S327)

This reader's engagement with these lines is clearly transformative, another sign of defamiliarisation according to Miall and Kuiken (1994a), in that it has led her to reconceptualise how things she had heretofore regarded as disconnected might in fact be connected. Of all participants in the study, this woman was particularly attuned to foregrounding, even to the extent that the language of her own commentary at times echoed that of foregrounded passages in the text. She spoke, for example, of "little scraps of phrases" that caught her eye, an apparently involuntary repetition of the description of the Dark Walk, which, at night, is "full of little scraps of moon" (p. 386).

A frequency count for Category 2 and 3 features revealed some notable differences. Overall, constituents in Category 2, "Response to style" (including foregrounding, defamiliarisation, diction and dialect), appeared three times more often in the simulation transcripts; whereas constituents in Category 3, "Imagery and visualisation," appeared more frequently in the linear transcripts. The differences between the groups on these dimensions were revealed as significant using Chi-square (see Table 8). Numbers in the left column under each condition denote the total occurrences of a particular feature of response (i.e., a comment may occur twice within a given transcript); numbers in the right column denote the number of protocols containing that feature.

Table 3.8: *Frequency of Category 2 and 3 feature occurrence*

	Linear		Simulation		Chi-square*
TAG	Total	Protocols	Total	Protocols	
Foregrounding	4	3	11	6	X^2 (3) = 11.28, p < .03
Defamiliarisation	3	3	12	5	
Diction	2	1	5	5	
Dialect	2	2	2	2	
Imagery	22	16	14	7	
Visual	10	8	6	4	

* Chi-square was calculated using the "total" frequency numbers; categories where expected cell frequencies were less than 5 (i.e., diction and dialect) were omitted from the calculation.

Of note in this table is that the findings are reversed in the two categories: while response to specifically foregrounded passages is more prevalent among simulation readers, general response to imagery is reduced by close to half. It would appear that simulation readers were inclined to focus on stylistically interesting phrases, but not to remark generally on the unifying imagery of the piece or to visualise the setting. This finding reflects the finding of Study I: possibly because they struggled to make sense of the narrative, simulation readers' attention was diverted to surface features; put differently, they shifted focus from global to local textual structures.

These results also call into question how the simulation might have affected personal engagement with the text. Responding to imagery, which often takes the form of generating a mental representation, is a highly individual activity that reflects in part the degree to which a reader is personally invested in what he or she is reading (László, 1990; Goetz & Sadoski, 1996). It would appear, given the reduced number of readers who commented on their ability to visualise the text in the experimental group, that the exercise of choosing between multiple links to some extent prevented this important form of personal response.

Self of reader

The other cluster that dealt specifically with personal response to narrative was Category 4, "Self of reader." Illustrative of several of the constituents in this category is the following reader comment:

> The thing that struck me the most was the trout, and it just reminded me of myself. When they talked about the trout being

> stuck in one position, and not being willing to eat, it reminded me of myself when I went through a bout of depression. I—just not, just feeling stuck, and no matter if people tried to change your surroundings, you just, just were stuck. You, I didn't want to eat, or anything. It was just kind of a feeling of loneliness even though people were there. (L304)

This reader's relation of the trout's imprisonment to her own personal struggle provides an example of autobiography, identification, and reader emotion. The final two statements in this passage also illustrate a high level of reader involvement, even to the extent that we see a blurring of the boundary between self and other when the reader has trouble finding a point of view from which to recount her thoughts: "*I*—just not, just feeling stuck, and no matter if people tried to change *your* surrounding, *you* just, just were stuck. *You, I* didn't want to eat . . ." [italics added]. Her shifting from first to second person implies more than simple informality of language; it is a turning point in her commentary, a stepping into character of sorts. When she speaks about Julia later on, we again have the sense that she is *in* the story, running alongside the twelve-year-old: "As [she] kept talking she, she pulled you out of the darkness, and then brought you into this light, and you went from light to darkness . . .."

As before, the difference between the groups was tested by Chi-square (see Table 9). Although the result on all features where expected cell frequencies were greater than five fell short of statistical significance, examining the distribution of these constituents nevertheless reveals some interesting trends. Three features had particularly high frequency counts: identification, general autobiography and reader emotion. Linear readers were twice as likely to identify with events and characters, and were also more inclined to express emotion in response to the narrative. Conversely, simulation readers were twice as likely to make autobiographical statements.[3]

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[3] The difference between the groups on these three features is in fact significant: X^2 (2) = 7.42, $p < .03$.

Table 3.9: *Frequency of Category 4 feature occurrence*

	Linear		Simulation		Chi-square*
TAG	Total	Protocols	Total	Protocols	
Identification+	23	13	13	9	X^2 (4) = 7.87, $p < .10$
Autobio-specific	2	2	2	2	
Autobio-general	16	11	28	20	
Involvement+	5	3	6	4	
Readeremotion	19	14	12	10	
Identification-	5	3	1	1	
Involvement-	6	5	4	4	

* Chi-square was calculated using the "total" frequency numbers; categories where expected cell frequencies were less than 5 (i.e., autobio-specific, enactment, and identification- were omitted from the calculation).

On initial analysis, the findings might seem counter-intuitive: like identification and reader emotion, autobiography is a form of response that implicates the self in the reading process. If indeed the simulation structure impaired readers' ability to engage with the narrative on a personal level, we might expect that they, being distanced from the text, would not then use it as a catalyst for autobiography. And yet interestingly, the readers' autobiographical statements, although of a personal nature, did not necessarily signal a high level of engagement with the narrative; on the contrary, they were often incidental or tangential in nature. Several readers were understandably reminded of childhood explorations or of fighting with siblings, but, as the following commentary reveals, their reminiscences regularly reflected a retreat from the text into the self, not a bringing of the text to bear on the self:

> Just being out in nature, and whatnot, reminded me of when I was younger, and being with my family out at our cabin, and my brother, how my brother and I would go on exploratory walks, and find different things, and that type of thing. So, it, it really just brought back a lot of memories of me from my own childhood. But nothing really was particularly striking or, or meaningful for me. (S316)

In itself, this reader proposes, the fact that the narrative evokes a memory does not make the reading experience personally meaningful. At no point in her commentary does she remark that she found "The Trout" emotionally engaging, nor does she state that she identified with the characters, nor that she was able to visualise the setting. If her commentary is any indication, she did not find her reading experience to be emotionally challenging or transformational. Ultimately, it would seem that readers whose connection with the text was more superficial were more inclined to fly off into their own memories.

The distribution of the occurrence of the three key features in the "Self of reader" Category—with linear readers scoring higher on identification and reader emotion, and simulation readers scoring higher on autobiography—thus supports the earlier indication that the level of personal engagement with the text may have been higher among linear readers, who were more inclined to consider the ways in which the narrative challenged or influenced them on a personal level than to retreat from the story into their own personal histories.

The remaining features included in the category had much lower frequency counts. Of these, only one, lack of identification, showed dissimilar numbers in each condition (linear, 5; simulation, 1); although the count is too low to warrant much by way of conclusion, it does reflect linear readers' tendency to remark more, one way or the other, on the question of identification. Results on the "involvement" constituents, both positive and negative, were similar across both groups. Interestingly, two readers, one in each condition, suggested that activating links promoted an almost physical involvement in the story. Linear reader L322 observed that clicking on the next link "puts you into the story more . . . because you have to make an action too," and concluded that this activity "keeps you interested in what you're doing, and what you're reading." Similarly, simulation reader S304 commented,

> I felt that I was sharing a special space, or a physical space with Julia. I felt that I was accompanying her in her journey through the dark walk. And I, well, I felt choosing the links was really representative of this because I could kind of choose part of my journey like Julia was choosing her journey. She was choosing her own action in the, the text, and I was choosing my own by

choosing links, and I just thought that was kind of significant. (S304)[4]

Although the instances of this form of commentary are isolated (one protocol in each condition), these readers' remarks provide a possible explanation for the marked attention to shifts in space by both groups in the reading times analysis discussed earlier (see Table 5, p. 115). If these comments are reflective of any other participants' experiences, it may be that while the medium is relatively novel and readers are still conscious of the physical space of the text and the processes they use to negotiate it, they may manifest this awareness through a parallel increased attention to narrative space.

Structure

Category 6, Story, contained all comments related to structure and narrative. In Table 10, which shows the frequency of features with overall counts of over five, constituents are organised into three subsets: i. difficulty with structure and/or narrative; ii. evaluation of the story (i.e., approval or disapproval); iii. other comments related to structure and/or narrative. As before, the differences between the linear and simulation groups were tested by Chi-square and were found to be significant. As in Study I, participants who read the simulation were far more likely to express confusion (confuse), to remark that the story seemed incomplete (loss), or to complain that the narrative was disjointed (storyflow-). Simulation readers were also less likely to state that they enjoyed the story (story+) (see Table 10).

[4] Responses such as these, in which readers remarked on their bodily sense of self during reading, were also clustered in Category 5, Body, under three feature headings: "reader-static," "reader-dynamic," and "dream." Simulation readers were slightly more inclined to remark that they felt as though they were moving, or "going along" (S304) with the characters. All told, however, the number of comments in this cluster was very low (see Appendix F), and thus I have not made a more extensive commentary on the cluster.

Table 3.10: *Frequency of Category 6 feature occurrence*

	Linear		Simulation		Chi-square*
TAG	Total	Protocols	Total	Protocols	
Confuse and Confuse+	4	3	11	6	
Loss	0	0	13	9	
Storyflow-	2	2	15	9	
Story+	7	6	1	1	X^2 (5) = 19.26, $p < .01$
Story-	5	3	6	5	
Storyq	0	0	16	8	
Suspense	9	8	11	11	
Plotsummary	4	4	1	1	

* Chi-square was calculated using the "total" frequency numbers; categories where expected cell frequencies were less than 5 (i.e., story+, plotsummary) were omitted from the calculation. Features with overall frequency counts of under two (i.e., closure and storyflow+) are not included in this table, but are available in Appendix F.

Their comments echoed those of the "Demon Lover" simulation readers—indeed, in some cases the similarity was remarkable. Recall, for example, reader S113's response to the hypertext version of the "Demon Lover":

> There were bits and pieces . . . it made it a little difficult sometimes to fill in the gaps. It almost seemed like there were bits of information that were missing, but I was able to put the puzzle together, so to speak, was able to figure out what was going on just from the action and the dialogue in the story. (S113)

This comment is cited in the preceding chapter as an example of how the "Demon Lover" simulation readers sensed that the text was incomplete, or disconnected, or both. (To reiterate, the above reader was the only participant in Study I who appeared to embrace the challenges facing new-age readers as described by Moulthrop [1991] and Douglas [2000]: he plotted his reading, or, in his own words, "put the puzzle together.") Consider, by way of comparison, the following remarks by two female readers of "The Trout" simulation:

> Reading this story off the computer was kind of confusing at first because as I went to different screens I realized the story wasn't in order, so I had to get pieces, bits and pieces of information from, in different order. And it was kind of confusing at first, but then I just adapted, and learned to take the information as it was coming, and then pieced it all together at the end. (S305)
>
> The story was kind of, actually kind of confusing for me. I really didn't get all that much . . . I got bits and parts of it, about the fish, and how she wanted to let it go, but it didn't really, this story didn't really strike me, so I didn't really have much feeling . . . The story seemed kind of choppy, kind of incoherent . . . it would jump from one topic to another topic about her and her brother fighting, and with the fish disappearing. I just couldn't get it. (S323)

The descriptors used by these three readers, particularly the first two, are surprisingly similar: *bits and pieces*, *information*, *putting (or piecing) it all together*. The first reader is pleased that he is able to "figure it out," and the second that she is able to "adapt," but the last cannot connect the seemingly disjointed "bits" or "topics" and rejects the experience at least in part because it fails to evoke feeling.

It would seem the first two commentaries paint a fair picture of the reality of reading at the current historical moment: texts are transforming and readers are adapting. Undoubtedly replicating this study in ten—even five—years would yield different results. Perhaps, given further exposure to literature in electronic form, the last reader might also "figure it out." But the understanding that text technologies and reading processes are changing does not make irrelevant the exercise of examining how readers are experiencing this change, and of considering what the nature of the change might be.

The use of the term *information* in the above statements seems particularly suggestive with respect to these last two questions. This term appeared only once in the Study I protocols, in the commentary of simulation reader S113 cited above. In Study II, however, its employment as a descriptor for the story occurred more frequently (eleven

times), and in both conditions generally signalled a distancing from the text on a personal level, as evidenced in the following remark by a daily Internet and email user who nevertheless did not enjoy reading "The Trout" on computer:

> It didn't seem like I was actually reading a story. It seemed like I was reading some sort of information thing on the computer. Also, it was really hard for me to visualize and for this to actually seem realistic. (S325)

Study II simulation readers, such as the participant cited here, were more likely to describe the narrative as "information" (linear, 3; simulation, 8), and were also almost twice as likely to note that they felt distanced from the text because of the medium.[5] The following excerpt from one reader's commentary gives interesting insight as to what factors may have contributed to this feeling:

> Reading this text on a computer versus on a book, or in a book, I should say, it kind of separated me a little bit because I was more aware of the environment, or my environment . . . Partially it's that a book seems more personal. I mean, it's smaller, you can hold it close to you. It becomes an extension of your arm if you've been reading for several hours. But a computer is sort of an entity on its own, as if it's holding the text a bit aloof from you. You can read it, but you can't quite get into it as much. I was more me, and less the girl, than I would have been in a book, I think. Choosing between the links was also very frustrating. I didn't like that because I had this feeling all the way through that there was something else going on, other stories, or other details, or other information that I didn't get to read, and I don't know how that would have—if—I didn't know if that would have affected the story, or my perception of the story. (S327)

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[5] Response to the computer medium is reported in the subsequent section on link choice and computer reading (see Table 14, p. 146); given the significant differences in response to the medium among linear and simulation readers, however, it is clear that the hypertext structure influenced response in this regard, and therefore this trend also warrants mentioning here.

Although this reader's response initially appears more a reaction to the medium than to the structure, it is clear that both elements have contributed to her sense of distance from the text. She personifies the computer as an isolated being, "an entity on its own," that is detached—superior, even—in its holding of the text "aloof." Her attitude, which mirrored that of several other readers who did not like reading on computer (see Table 14, p. 146), reflects what publishing industry executives hoping to capitalize on distributing non-hypertext fiction in electronic form readily admit: "Consumers have not accepted electronic devices for reading e-books" (Levere, 2001).

But there is more to this reader's estrangement from the narrative than her aversion to the computer as a vehicle for literary text. In discussing the simulation structure, Participant S327 echoes the feelings of the "Demon Lover" readers who struggled with the nagging sense that they were missing portions of the story (recall their tendency to see "gaps" in the narrative even when events were described quite clearly). She worries that "something else is going on, other stories, or other details, or other information," elaborating at some length:

> Making all those choices—every one seemed to sort of compound the loss of the last one. If I had . . . three choices in just about every one, I missed two every time, and after three choices, I'd missed a good six links, and I don't know whether the information was exactly the same or not, but I felt like I'd missed a lot of the story, or a lot of the background, or a lot of the details. I mean, it made sense as it was, but it's sort of like a book where you get to the end and you want a sequel just to hear about the other characters that were sort of mentioned but never really explored. Except in this case it was like the sequel was written but the only place you could get it is some library half way across the continent. So it's unavailable there, and if you could only get to it, it might satisfy some curiosity. But the likelihood of getting to it is, well, zero. (S327)

This response is in part an effect of the lack of a back button in the simulation, but it also gives a sense of how readers of large-scale hyperfiction might feel in struggling to orient

themselves in texts with multiple paths, no overviews of the text structure that enable them to determine what they have or have not read, and guard functions and automatic refresh times that prevent easy reversal through the network. Their efforts to map their readings in complicated networks (Moulthrop, 1991), or to find a route through the maze (Douglas, 2000), or to solve the puzzle (my own readers' description), are all attempts at ordering—as is the above reader's desire to see everything laid out squarely so that she might confirm that she has explored all there is to explore.

Douglas (2000, p. 83 ff.) has considered the question of closure in hyperfiction, resolving (like Joyce, 1997) that hypertext demands rereading, and that arriving at closure in this medium is a matter of exhausting possibilities. Perhaps this is so, but a question not addressed in this assessment is what aspect of literary response, if any, is replaced by activities such as mapping, finding, solving, exploring, and ordering? The results of this study, like those of Study I, suggest that one side effect of diverting reader attention to matters of structure is personal detachment from the reading experience and an accompanying recasting of literary text as *information*—a not surprising turn of events given the derivation of the term: literally, *in-form*, "to put into proper form or order, to arrange; to compose (a writing)" (*OED*). As one reader puts it, "I chose links that sort of related to each other because I thought, you know, that way I'd get the most information out of it, and I'd have the most continuity" (S304).

In keeping with this strategy of "getting the most out of it," readers tended to read with attention to plot. At times they questioned the narrative (see the "storyq" feature), puzzling over whether their efforts to "in-form" the text had achieved the best results. For example, one reader wondered if the story she ended up with was "appropriate," another voiced her concern about the possibility of choosing "wrong" links, and a third reflected that his choices were wanting because he had failed to discover basic information about the characters:

> I chose, I don't know, not a series of links that would have been, I don't know, appropriate. (S301)
>
> I felt a little, like, self-conscious about choosing links for fear that I would miss something else, or choose the wrong one. (S325)

> At one point I kind of wished I had chosen to learn more about the characters in the story because near the end I found myself wondering who was who exactly. (S328)

Conversely, some readers were pleased because they surmised they had in fact chosen suitable links—for example, links that lead to "the next part of the story" (S310) or that effected a "normal" (S305) or "proper" (in the case of the following reader) progression of the narrative:

> When I chose Julia at the very beginning, I just felt like that was a proper opening because, you know, at the beginning—at the introduction of a story—you learn a little bit about the characters, and just what they're doing and stuff before they get into real action, and description, and plot. (S304)

In other words, in certain cases the simulation may have encouraged a more critical mode of reading because readers in this condition did not take the plot for granted as did those who read the linear version; instead, they brought their understandings of possible narrative sequences to bear on the question of what might constitute an appropriate order of events in the case of "The Trout." Of course, their awareness of possible narrative sequences as evidenced in their commentaries was clearly very limited, having been gleaned from what they had encountered most in their reading lives: conventional Western fiction in print. How young readers with more varied reading experiences might respond to hypertext is clearly a topic for future studies with young people from various cultures who have grown up reading multiple genres (literary and otherwise) in both print and electronic form.

The final feature in Category 6 that deserves some discussion here is suspense. Recall that in Study I simulation readers were more likely to experience the story as suspenseful (linear, 1; simulation, 9), and that the single linear reader who did comment in this regard made the interesting observation that the presentation of the story as a series of nodes may have heightened expectation by creating "a little climax" at the end of each node (see page 106). In Study II, a marked difference between the groups on this feature was not evident (linear 9; simulation 11); but it became much clearer, as demonstrated in the following several statements made by both linear and simulation

readers, that the presentation of the story as a series of nodes connected by links was a key factor in contributing to the experience of suspense:

> I think it's a neat way to read with, with having it broken up. You really get the suspense going in the story [because] you want to keep on reading, on and on. You can't just—your mind doesn't drift. You're always stuck to that, that small amount. (L305)

> It would suddenly twist . . . [but] it's a different kind of a twist where you don't expect it, so the links kind of cause you not to suspect [the twists] because you—it totally surprises you when finally you hit a link. (L309)

> Activating links, I guess, is just anticipation, wondering how the story would continue, or what the certain word would lead to. That's the mood that I would feel. (S318)

> When you have that feeling, you just get the, I don't know, emotions of excitement, and jittery, jittery, and not knowing what's going to happen next, and feeling excited. The experience was much like those *Choose Your Own Adventure* books that I used to read as a kid. (S301)

As the participant numbers indicate, the first two readers here are linear readers, and the latter two simulation readers. Reader response to the increased feeling of suspense evidenced in these commentaries was divided: some greatly enjoyed it (i.e., L305), while others found it disrupted their ability to connect with the narrative. For example, the last reader cited here, who also felt the story was not "appropriate," made it clear from the brevity and nature of her comments that she did not find "The Trout" engaging. She concluded her brief (240 word) response by observing that she attempted to find links that "would continue it better, but it didn't seem to work that way" (S301). Still other readers felt oddly pressured, as though compelled by the structure to read more quickly than usual: "With the links, and having to wait, it creates suspense. But I prefer to just have it in front of me and read at my own pace rather than having to move ahead" (L312). Why this reader felt she could not read at her own pace is puzzling. Perhaps her comment

is an indirect reference to the fact that she could not flip backward and forward within the text; or perhaps she shared the sentiment of this simulation reader, who cited the computer itself as a source of anxiety: "the feeling I got from choosing different links—I just felt pressure probably just because the computer is here, and it was waiting for me to make a choice" (S326).

Reader pace

Statements about reading speed were assigned their own constituent category. Their frequency was low and did not reveal a significant pattern; but nevertheless the comments, as evidenced above, were interesting and at times perplexing. Seven readers across both conditions (linear, 3; simulation, 4) remarked that they felt they were reading more quickly. Almost all observed that they felt the computer format encouraged them to do so. One linear reader, who confessed to scanning to get to the links, explained:

> I just felt like, you know, the "next page," it always stuck out when I was reading the rest of the story. I kept on moving my cursor to there, and I was almost ready to click on the "next page" already, so I found that I went through the story quite fast. (L315)[6]

A further three linear readers made comments echoing that of reader L312 (cited in the preceding section), that the medium facilitated their ability to select a comfortable reading speed in a way that print technology did not. Observes one simulation reader, "when I got anxious to see what came next, I felt like I could speed up the process" (S311). Again, however, how this reader imagined clicking a link to be any faster than glancing to the next paragraph or flipping a page in a print document is unclear, unless her remark has to do with the allure of text; perhaps the simulation encouraged her to take an "out-of-sight-out-of-mind" approach, whereby guilt over scanning to get to a link was assuaged because, as the text vanished, so did its call for attention.

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[6] In fact, the link at the bottom of each screen read, simply, "next."

Link choice and computer reading

The final categories remaining to be discussed here are "Link choice" and "Computer reading." To contextualise commentary on the former, I should first take a moment to present the findings on frequency of link choice. As before, the links in the simulation reflected one of three story elements: plot, character, or stylistic foregrounding. Calculating the frequency of link choice showed a slightly different pattern from that found in Study I (see Table 11).

Table 3.11: *Frequency of link choice in "The Trout" simulation*

	Per node	Total	Percent
Plot	11	99	**37**
Character	12.44	112	**41**
Foregrounding	6.56	59	**22**

"The Trout" readers preferred character links and paid less attention to foregrounded links, while the "Demon Lover" readers preferred plot links and infrequently chose character links. When the data obtained from both studies is compared, it becomes evident that the difference between the groups resulted from a notable disparity in the tendency to choose character or foregrounded links. While the preference for plot links remained constant (close to 40%), there was a reversal in the counts of the latter two categories (see Table 12).

Table 3.12: *Comparative table of link choice (by percent) in both studies*

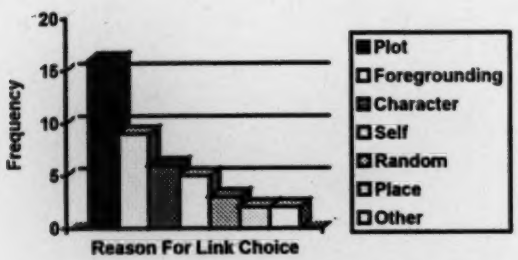
	Demon Lover	Trout
Plot	39	37
Character	28	41
Foregrounding	33	22

To determine what factors may have influenced readers' decisions in "The Trout" study, link choice frequencies were, as before, correlated with age, gender, and the

various Literary Response Questionnaire factors. The results were not illuminating, most probably because there was not enough diversity in the group of readers who participated in the second study. As noted earlier, "The Trout" readers were primarily first year university students; 88% were female, and 86% were less than 20 years of age. Therefore, nothing that approached significance was revealed in terms of how age or gender may have influenced link choice. With respect to the LRQ factors, a negative correlation was noted between the choice of character links and the rejection of literature feature, $r(28) = -.449$, $p < .02$. A negative correlation was also noted between the choice of character links and the empathy feature, $r(28) = -.474$, $p < .02$. This last is puzzling, for one would expect to discover a positive correlation between these two factors. The finding becomes somewhat clearer, however, when reader commentary is taken into consideration.

Comments on link choice in "The Trout" study were made in response to a direct question asking readers to indicate what prompted them to choose particular links above others. Twenty-eight simulation readers made statements in this regard, revealing a number of reasons for link choice (see Figure 7).

Figure 3.6: *Number of protocols containing comments on motivation for link choice*



Note: Feature names are: **plot:** link choice was plot-based; **foregrounding:** link choice was influenced by foregrounding; **character:** link choice was character-based; **self:** link choice was influenced by reader's personal situation; **random:** link choice was random; **place:** link choice was influenced by the physical placement of link words; **other:** motive for link choice does not fit any of the above categories.

Interestingly, the majority of simulation readers remarked that they chose links to forward the plot, a finding that contradicts the actual frequency of link choice. A much

smaller group of six readers observed that they chose character links. And although foregrounded links proved least popular in practice, selecting words that "sounded nice" (S315), or that "made [the story] more visual" (S310), was the second most popular reason given for link choice. Other motives were varied: some pursued a personal connection with the text, choosing links because, as one reader puts it, "they reflected me" (S326); a small number stated that their choices were at times random; and two observed that they occasionally chose the final link on the page "to see if it would continue with the same line" (S330) or because "it might have the most possibility of being related to what happened at the bottom of the page and less at the top" (S327).

Some comments did not fit well into any category. For example, one reader chose the name "Julia" when it was offered as a link because "it's a TV character" [sic] (S303). Another's preference for "positive" over "negative" words was similarly difficult to categorise, although she later explained: "I thought maybe that would provide the happy ending" (S333). This second remark was noted as a plot-based motivation for link choice. Otherwise, only one reader identified the linking pattern: "sometimes it was a name, or sometimes it was an action, or a description" (S318). And very few—two certainly—focused knowingly on a particular element. Participant S315, for example, commented extensively on the "wonderful phrases," and deliberately selected foregrounded links seven of nine times; and participant S323, who chose character links on six of nine occasions, stated that she was "drawn more to the emotional side" of the story and consequently chose links about "feelings and about the girl herself."

The transcript data thus revealed a wide range of motives and strategies respecting link choice, and demonstrated that it would be unwise to draw conclusions about reader motivations based solely on their choice of links, for participants' understandings of the significance of particular links did not always correspond with the intended significance of those same links (in other words, my categories did not always hold up, for my own associations of certain terms with particular narrative qualities did not necessarily correspond with the associations those same words brought to mind for readers). This reality is illustrated particularly well in the remarks of the two readers cited below, who selected character links not to discover more about the disposition of a particular person, but because they felt that "following" a character would advance plot:

> In the first link I chose Julia just because I wanted to follow her own actions, and what was happening. I didn't want to get, you know, too descriptive. (S304)
>
> The choices I made in the links were the ones I thought would give more of the story, like clicking on character names, or the particular description of feelings that were highlighted that you wanted to find more about. (S322)

In light of theories positing that hypertext models the associative workings of the mind, or that it gives over control to readers, this is an important finding. "The Trout" study demonstrated in no uncertain terms that associations of the programmer (in this case, myself) are not the associations of the reader.

Comments such as these also suggest that reading for plot may have motivated more of the participants than link choice frequency indicates, and provide an explanation for the increased popularity of character links in the second study. That some of "The Trout" readers selected so-called character links in the hopes of forwarding plot is understandable given the substantial differences between the two narratives and their protagonists. In opposition to the serious and meticulous Mrs. Drover, who is manipulated by forces beyond her control, Julia—youthful, energetic, and spontaneous—drives the action of "The Trout." Her temperament, her place in life, her feelings about the fish, all set in motion a sequence of events that culminate with her midnight rescue. In the case of "The Trout," it seems, character *is* action.

If story-driven readers did gravitate toward character links, then the unexpected negative correlation between the choice of such links and the empathy feature of the LRQ becomes understandable. More broadly, the response of "The Trout" readers serves as a reminder that the lines between different elements of fiction are never distinct. Obviously this applies not only to the inextricable link between plot and character, but also to other elements of fiction. For example, it is the setting—both intriguing and terrifying to a child—that in part fosters suspense and high emotion in O'Faolain's narrative. Thus, in the second-to-last node of the story readers might understandably select a foregrounded link about the silent-flowing river not in the hopes of expanding description about the

moonlit water, but surmising that the swift midnight current that laps at Julia's ankles is an ominous detail suggestive of impending tragedy.

Feelings among readers were thus divided as to where individual links might lead. For participant S322, we have seen that choosing character names and feelings offered to give "more of the story"; yet for another participant, S328, the opposite was true:

> Basically, what prompted me to make the choices I did was just my interest at that moment, what piqued my interest, and what I'd like to read more about . . . The story lines are something intriguing or interesting, not so much facts or descriptions, and that kind of stuff, which is, I guess, why I didn't pick the character links . . . because I was more interested in what the story was going to be. (S328)

Of note in considering these two readers' statements is that their actual link choices were similarly distributed, as the following table shows:

Table 3.13: *Frequency of link choice, Participants S322 and S328*

	Plot	Char	Fore
S322	2	4	3
S328	3	4	2

Indeed, more often than not (in 5 of 9 cases), the two chose the same links even in spite of the fact that S322 stated he preferred character links and S328 stated he avoided them. Beyond demonstrating that each reader constructed a different model of how individual links functioned, and that my own categories did not necessarily match their models, such discrepancies also bring into question readers' recollection of which links they chose and what motivated them to do so. Certainly some lapse or distortion in memory would be expected given that they commented after completing the story.[7] It is possible that the confusion effected by the simulation caused participants to struggle in making sense of how they navigated through the apparent network.

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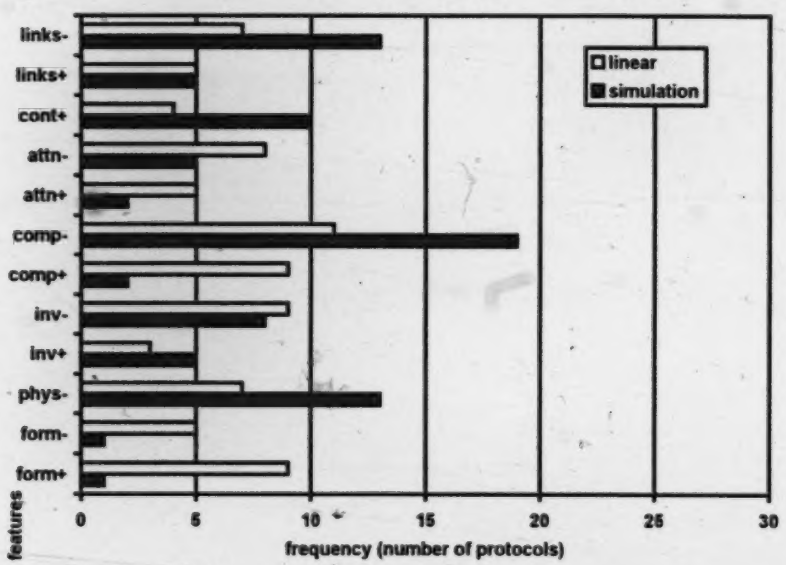
[7] Talk aloud commentary made during reading might have provided more reliable results, but at significant expense to other areas of the study: the process would have skewed reading times and would have disrupted the natural reading process to a greater extent than deemed desirable.

Experiencing links

Beyond revealing the diversity of motivations and strategies directing readers' link choices, "The Trout" study afforded some interesting insights concerning how participants experienced moving through a story presented onscreen by activating links. Not surprisingly, given the unusual format, the simulation readers commented more extensively about their experience of the medium and the text structure. The following graph shows the number of protocols containing comments having to do with links (Category 7) and/or computer reading (Category 6). Comments that appeared infrequently (i.e., generally less than seven times across both reading conditions) are not shown here.[8] The first five features shown are from Category 7, and the remaining seven from Category 6.

Figure 3.7: *Number of protocols containing comments on links (Category 7) and computer reading (Category 6)*



Note. Feature names are: **links-**: links disliked; **links+**: links enjoyed; **cont+**: links promote control; **attn-**: links distract attention from text; **attn+**: links promote attention to text; **comp-**: computer reading disliked; **comp+**: computer reading liked; **inv-**: computer inhibiting; **inv+**: computer promotes involvement; **phys-**: computer physical properties disliked; **form-**: formal properties of the text disliked; **form+**: formal properties of the text liked.

[8] See Appendix F for a table displaying the frequency of reader comments in both conditions across all categories.

Readers in both conditions remarked that they disliked links more frequently than they said they enjoyed them. For some simulation readers, the format was troublesome because it challenged their previous experiences of story in print form: "As for the choosing between links," remarked one reader, "I would have rather just had a linear story" (S330). Others associated choosing between links with conducting research via the Internet, and thus felt the format detracted from the experience of reading narrative for pleasure. And still others were unnerved by the uncertainty of the process:

> Activating links . . . I didn't really like it. It was, it was kind of neat but it made me wonder what it would be like, what it, what the other links would have given me. (S321)
>
> I had a really hard time distinguishing between links to choose because it didn't really point out as to where they would go, or what significance certain words had. (S318)

Thirty percent of the simulation readers noted that the links made them feel more in control of the text; although the feeling of control did not necessarily coincide with enjoyment of the structure of the text, as the following remark indicates:

> I felt, when I was choosing the links, that I could choose what I wanted to read, and I could make a choice as to what I thought would be most interesting. Reading on the computer I think was, I don't know if I enjoyed it as much as I do reading in a text because it seems like you read a paragraph, and then you, the paragraphs are chopped up because you have to choose something to go on to the next. You can't just continue with your reading. (S307)

Both linear and simulation readers were more inclined to remark that the links distracted them, that they did not enjoy reading on computer, and that the computer presentation inhibited their involvement in the story. The only exception to this trend was in the case of textual formal properties (text-form-prop); in this constituent linear readers were more inclined to express approval than disapproval of the text. Even if they disliked the experience of reading on computer generally, several linear readers noted that the formal properties of "The Trout" (i.e., wide margins and a limited amount of text on each page)

helped them focus: "It's a lot easier to read just for the simple fact that you really focused on the text shown, instead of having all these pages and lines kind of in the background vision" (L311). Interestingly, very few simulation readers commented, positively or negatively, on this factor.

The difference between the two groups of readers on the dimensions discussed above was tested by Chi-square (see Table 14). Again, numbers in the left column under each condition denote the total occurrences of a particular feature of response; numbers in the right column denote the number of protocols containing that feature.

Table 3.14: *Frequency of readers' comments on links and computer reading in linear and simulation conditions*

	Linear		Simulation		Chi-square*
TAG	Total	Protocols	Total	Protocols	Constituent Categories
Links+	5	5	6	5	**Links** X^2 (4) = 10.31, p < .05
Links-	7	7	15	13	
Control+	8	4	13	10	
Link-attention+	11	5	2	2	
Link-attention-	9	8	8	5	
Compread+	11	9	2	2	**Computer Reading** X^2 (5) = 19.46, p < .01
Compread-	12	11	21	19	
Comp-involve+	4	3	6	5	
Comp-involve-	12	9	9	8	
Comp-phys-pr-	7	7	13	13	
Text-form-p+	11	9	1	1	

* Chi-square for each constituent category was calculated using the "total" frequency numbers; categories where expected cell frequencies were less than 5 were omitted from the table.

The Chi-square test showed that the discrepancy in frequency of reader comments were significant in both categories of experience. While this is not unexpected in the case of the "links" category given the difference between the linear and simulation structures, it is interesting how strongly the simulation design modified the participants' response to reading on computer generally. Whereas linear readers were almost equally divided as to whether they liked or disliked reading on computer (9 verses 11), simulation readers were unmistakably frustrated by the medium. In total, nineteen remarked that they disliked computer reading, giving various reasons:

> I don't enjoy reading stories like this on the computer because I find it, I find it hard to read—the words blend together and I skip lines. (S302)
>
> I actually really hate reading things on the computer because I just find the whir, and just the buzz of the computer really distracting and annoying. (S304)
>
> I like reading actual books a lot better than reading off a computer screen. It just seems more natural. (S322)

Apparently the simulation readers' general frustration with the structure of the story negatively influenced their impression of the medium as well.

Summary of results

Study II thus supports the overall finding of Study I that the structural difference between linear and self-navigating electronic text environments effected important changes in reading strategies. An examination of reading times indicated that although simulation readers took longer on average to read the text, they rushed, oddly, to complete longer segments. Apparently, as was the case in Study I, the simulation provoked a certain degree of agitation among participants. Readers in the experimental group were also less attentive to temporal shifts in the narrative. This result mirrors that obtained in Study I, and suggests that the hypertext form disrupted readers' ability to discern temporal continuity.

The verbal commentary demonstrated that simulation readers, as before, struggled with the presentation. Although both groups made similar numbers of interpretive or analytical comments, hypertext readers were half as likely to comment on imagery or about their own visualisation of the setting. On the other hand, they were more likely to remark on localised foregrounded stylistic features. This finding supports the results obtained in Study I that suggest simulation readers, unable to construct the situation, turned their attention instead to the foregrounded surface features of the text. Marked differences were also apparent in the participants' abilities to engage personally with the narrative. Linear readers were twice as likely to state that they identified with the characters and were also more inclined to note their own emotional response to the

situation. Conversely, simulation readers were almost twice as likely to recount personal experiences in the course of their commentaries. By their own admission, however, these autobiographical statements did not necessarily reflect strong personal engagement with the narrative, but rather, a retreating from the narrative into the self. As was the case in Study I, simulation readers were more inclined to express confusion, to remark that the story seemed incomplete, or to state that the text lacked coherence. They also tended to question whether the text met their personal expectations of story. Their responses mirrored those of the "Demon Lover" simulation readers, who likewise found the text disjointed or choppy, and expressed the concern that they had perhaps missed important details that lay along other paths. With respect to reader pace, a handful of participants across both conditions admitted that their attention was drawn to links, which made them feel rushed to read the text. This would appear to be a feature of the newness of the medium (i.e., because hypertext is still not a "transparent" vehicle for literary text, readers are quite conscious of the method by which they move from one segment of text to the next).

Reader commentary on link choice and computer reading also revealed some interesting patterns of response. Although simulation readers in fact chose character links most often, they claimed to prefer those they thought would forward the action. Beyond suggesting that they were story-driven, this demonstrates that readers' perception of the significance of individual links does not always match the intended significance of those same links. Even given the limited nature of "The Trout" hypertext simulation, this finding supports the position of researchers who oppose the notion that hypertext models the associative workings of the mind (cf. Dillon, 1996, pp. 28-29). Finally, simulation readers generally did not enjoy choosing between links even in spite of the fact that about a third claimed doing so gave them a sense of control. Their aversion to this process was accompanied by a general distaste for the formal properties of the text and for the computer as a medium for story.

How narrative conventions fit new inventions

What, then, might we conclude from these studies? First, it is important to stress that it is not my intention to generalise these findings. Clearly the simulation constitutes

in certain respects a limited and artificial situation for the reader. The lack of a back button in particular prevented participants from engaging in rereading strategies that some (cf. Joyce, 1997) have deemed the distinguishing feature of hypertext reading. Moreover, the stories were manipulated to an end for which they were not intended, and this in itself may have caused some reader confusion; because they are print constructs, these texts beg readers to proceed according to the rules of books, some of which conflict with the emerging rules of hypertext. To this end, it is worth taking a moment to consider what assumptions experienced readers of print bring to the texts they read, and how the simulation might have confounded those assumptions.

Rabinowitz (1987) suggests that there exists a set of understandings about how narrative texts work that writers and readers of print share. He calls these the "rules" of reading, describing four categories: notice, signification, configuration, and coherence. Briefly, and with respect to the first category, readers approach story in the knowledge that they need not attend to every detail equally in order to come away with a reasonable understanding of the whole. To determine which details are most important, and which less so, they follow unspoken rules of notice such as privilege of position. The first mention of the well in "The Trout," for instance, is privileged because it punctuates a pointless sibling fight that cannot be resolved except through diversion, a tactic the children's parents employ by asking them if they observed the well while running in the Dark Walk. At this question, the fighting abruptly ends, and Julia cranes her neck and widens her eyes, an action that serves as a signal to readers that they, also, would be wise to take notice of this detail. Respecting the second of Rabinowitz's categories, what significance readers accord such particulars might be influenced by a number of factors, including point of view, source, and implicit instruction by the author. In this case, O'Faolain lends added importance to the well by making an authorial comment that immediately renders it a subject of speculation:

> She opened her eyes at that and held up her long lovely neck suspiciously and decided to be incredulous. She was twelve and at that age little girls are beginning to suspect most stories: they have already found out too many, from Santa Claus to the Stork. How could there be a well! In The Dark Walk! That

she had visited year after year? Haughtily she said,

"Nonsense." (p. 384)

The third category entails rules of configuration, which, according to Rabinowitz, are essentially predictive (p. 111). Simply put, readers expect certain patterns because they have encountered them before. Thus, even though Julia verbally dismisses the existence of the well at the end of the above statement, readers nevertheless expect that she will seek it out; indeed, they would likely be perturbed were she not to do so, perhaps concluding, in retrospect, that the text is lacking because significant elements have been left hanging. This last conclusion on the part of the reader would entail application of the rules of coherence, which, according to Rabinowitz, generally come into play when readers are in a position to determine whether the whole hangs together because they have "completed [the text] and reworked its elements into a total pattern" (p. 110). In arriving at a sense of coherence, readers often fill in gaps or, at the other end of the spectrum, gloss over details that are less relevant. To return to our example, although O'Faolain brushes over Julia's return journey to the Dark Walk to find the well, we might extrapolate a good deal of visual and emotional detail from his minimal account, "But she went back, pretending to be going somewhere else . . . " (p. 384), perhaps envisaging her trailing along a path toward the river feigning disinterestedness, glancing occasionally over her shoulder to determine if she is being overlooked, and then, once out of sight of the house, breathlessly whipping across the back of the lawn toward the undergrowth. On the other hand, following the protagonist's lead, we might give only passing attention to her parents' theories about how the trout came to be in the well. Such strategies enable readers to make sense of the whole and also, as discussed elsewhere, provide a way for them to make the text personally meaningful because their own narratives and images become interleaved with those of the author.

In what ways, then, might the simple addition of links have confounded the sorts of readerly activities described above? Rabinowitz observes that "there are two ways in which communication can fail on the question of notice: the irrelevant can appear to be prominent, or the crucial can pass by unnoticed" (p. 54). In the case of the simulations, the first of these was clearly true: the typographic prominence of linking words, along with their function as transitional devices, caused readers to assign them significance

unbefitting the texts. Further, linking into a subsequent node on the strength of a particular word evidently perpetuated this problem. In the case of the above-cited passage, for instance, "long lovely neck" and "little girls" constitute two of three links. Although none of the readers commented in this regard, it is reasonable to surmise that linking to a passage in which an unaccompanied young girl enters the dark woods of which she is admittedly afraid on the strength of the phrase "long lovely neck" would potentially cast the whole in a sinister light given that the neck is both vulnerable and, especially coupled with these adjectives, sexual. Readers, thus falsely alerted to the possibility of treachery, might assign unwarranted significance to details in the ensuing passage, and their doing so is bound to impair their ability to predict the configuration of the text with any degree of accuracy. That readers become frustrated or disinterested when their expectations are repeatedly undermined in ways they do not perceive to be meaningful is certainly reflected in the comments of participants who read "The Trout" simulation:[9]

> [There] were things that I wanted to happen in the text . . . but sometimes, though, even though I chose a word, and I wanted something to happen, it didn't happen, and that was kind of, I guess, a little bit disappointing and surprising. (S326)
>
> It didn't really seem to, to all flow together, so it sort of lost my attention. (S311)

Clearly such difficulties resulted in part from the experimental design. Just as surely as an encyclopaedia entry would appear lacking were one to set it in ten-syllable lines and tell students to read it as poetry, so "The Demon Lover" and "The Trout" failed as approximations of hypertext because, simply, they were not written for the medium. It would be unreasonable to suggest that hypertext is somehow flawed as a vehicle for narrative solely on the basis of this research; but this being said, it is also possible to see how readers of some native hypertexts might encounter similar problems to those

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[9] Evidently undermining reader expectations is a powerful rhetorical strategy when employed with purpose. Our expectations, for example, are undermined at the end of "The circular ruins" when the gray man is not burned by the flames, but this does not serve to render the piece incomprehensible; on the contrary, his realisation that he too is an illusion, and that the creative process is to start again, reinforces the cyclical motif in the story and imbues the whole with meaning. The sort of confounding of reader expectations that is at work in the simulation and in many literary hypertexts, however, is in many respects arbitrary.

experienced by my own readers. For example, the "anywhere" factor of *Forward/Anywhere*, as discussed in the last chapter, renders virtually impossible any attempt to predict narrative patterns, as does Moulthrop's interweaving of various genres in unpredictable ways in *Hegirascope*. But does this matter? Is the need for coherence a thing of the past, as some have suggested the need for closure is (i.e., Douglas, 2000, p. 122)? Might literature simply be paralleling the aesthetic progression of music, whereby arrangements deemed wholly unpalatable by seventeenth-century audiences are accepted as inspired by modern audiences? Or is some form of unity, as Platt (1994) suggests, a necessary feature of story? According to Rabinowitz (1987), the latter is true. He argues that one of the fundamental rules of coherence, regardless of how avant-garde the writing, is that "the text *is* coherent and that apparent flaws in its construction are intentional and meaning bearing" (p. 147). Put another way, we work at *Ulysses* because we assume the whole, however dissonant, is designed with intent. Randomness, while interesting in principle, would appear to annoy non-expert readers; this was apparent in the commentary of the simulation readers, who voiced irritation at what was perceived by some to be an abdication of authorial responsibility in designing a meaningful work of art. As one simulation reader put it, "I don't really like this computer idea, or choosing of the links, just because . . . maybe I'm old fashioned or traditional, but I, I always believe that books are a little more mysterious, that it's an author's creation" (S326).[10]

This remark returns us yet again to the fundamental question posed earlier: by leaving more room for the reader, might hypertext facilitate the process of self-conceptualisation better than does print text? The answer would appear to be no—or at least, not yet. In spite of the fact that participants in both conditions read identical texts, those who read the simulations withdrew from the stories on a number of levels: their attention was diverted to surface features of the narratives; they were less inclined to visualise the settings or to identify with the characters; they tended to fly off into their own personal histories in responding to the stories; they were less inclined to read their own imaginings into the gaps in the narrative because they appeared to be working on the

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[10] Douglas's (2000) readers of *Forking Paths* expressed similar frustration, as did the readers of *Hegirascope* with whom I worked, one of whom stated emphatically, "In my opinion this was not reading. I thought at first that it was like reading a magazine, with disconnected articles. I soon realized it was not like that at all. I had trouble finding . . . anything that made any sense to me at all" (p. 80).

assumption that they would find the "missing pieces" if they were clever enough to select the right link; and their attention was diverted to the exercise of determining plot rather than reading for self-insight or to engage with the literary qualities of the text. In short, the hypertext form appeared to prevent an engaged and personal level of response.

Liberating gods

In a lecture on poetry, Bryant (1884/1962) observed that one of its chief purposes is "to touch the heart," and lamented the academic tendency of making it a means to a critical end by focusing on its figurative qualities and ignoring its power to elicit feeling. Perplexed, he remarked, "I do not know by what authority these gentlemen take the term poetry from the people, and thus limit its meaning" (p. 216). In considering the bulk of critical discourse on hypertext, we might ponder a similar question. Hypertext has been deemed engaging, liberating, even *enlivening* by Snyder (1996), who portrays it as a sort of electronic redeemer that grants readers "new life" (p. 71). In hyperspace, readers are said to be emancipated from the *binding* form of the book: newly active, they play, perform, map, interact, and collaborate. But have readers ever truly been passive, and have they ever needed liberating? In speaking of the process of reading, Emerson (1844/1962) observes that already inherent in literature are the powers of "emancipation and exhilaration." When reading, he says,

> We seem to be touched by a wand which makes us dance and run about happily, like children. We are like persons who come out of a cave or cellar into the open air. This is the effect on us of tropes, fables, oracles and all poetic forms. Poets are thus liberating gods. (p. 265)

Sidney (1595/1962), taking a broader perspective, observes that story is both captivating and liberating: "with a tale forsooth he cometh unto you: with a tale which holdeth children from play, and old men from the chimney corner" (p. 39). But the sort of captivation of which Sidney speaks is not to be feared; on the contrary, literature's power to capture both the imagination and the heart is precisely what makes it liberating, and what drives us to seek it out in our spare moments. Hypertext, then, may be a promising vehicle for informational text, it may present an interesting textual forum in which to test

contemporary literary theory, and it may comprise a remarkable place for creative writers wishing to experiment with form, but it cannot offer to liberate readers who are already free, to make them more active, or to provide a better a venue for reading processes such as self-conceptualisation. As Snyder (1996) observes, it is often the extreme rhetoric employed by hypertext proponents that makes literary educators dubious about its place in literature and literary education (p. 118-119). Ultimately, if we are to draw nearer an understanding of the implications of hypertext for literature, literary reading, and literary education, we would do well to follow the lead of Borges's gray man in recognising the limitations of current approaches and in seeking an alternative method of work.

Afterward

Revisiting the ruins

On literary education in the information age

In this last section I should like to return to our classroom, to Ellen and Curt and to the questions they raise about literary education in the information age. The foregoing chapters contextualise their concerns about learning and reading with computers, suggest some answers to Curt's query about "what goes on behind the screen," and provide a glimpse of possible futures for literature and literary reading. "Revisiting the circular ruins," however, also raises some serious questions about how modern-day teachers of secondary English are responding to a question that has been asked of them repeatedly by governments and boards of education, as well as by the media, the business community, the public, and so on: namely, what steps are you taking to integrate computer technology meaningfully into the curriculum for which you are responsible? Although Ellen attempts to be flexible and forward thinking in her teaching practices by offering composition topics that give students like Aaron a chance to experiment with electronic writing spaces, some of her colleagues are so uncomfortable with computer technology (or are so dubious about its possible educational benefits) that they ban Aaron's laptop from the classroom.[1] This may seem an exaggerated and unjustifiable response, and yet, if we consider the position of these teachers practically and theoretically, their actions, although not necessarily condonable, are certainly understandable. To conclude this thesis, then, I should like to step back and take a wider angle on the question of what computers—particularly hypertext—might mean for the future of English education.

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[1] Instances in which teachers or professors react strongly against using technology in the classroom have been documented in many institutions attempting to integrate technology on a wide-scale across subject areas. Faculty at York University in Canada, for example, went on strike for 55 days in 1997 in order to protest, among other things, the prospect of being forced to integrate technology in their teaching. One professor, Curt-like, argued that she has "no interest" in the Web or multimedia hypertextual teaching software in her classroom, citing by way of explanation several drawbacks: "it reduces face-to-face contact; it can discourage critical thinking by students who move quickly among screens full of information; and its bugs and glitches can waste valuable teaching time" (Young, 1997).

On technology investment and integration

It has become the expectation of many governments and boards of education across North America—indeed, around the world—that teachers of all subjects find ways of integrating computers in their teaching. In the Canadian Province of Alberta, where Ellen works as a teacher in an urban high school, the premise behind this expectation is detailed in the new technology curriculum (Alberta Learning, 1998):

> Technology is most importantly about thinking: communicating, inquiring, decision-making and problem solving. It provides us with techniques and processes to think differently, to solve and resolve problems by using strategies that are "out of the box," to design new products or ideas, and to make informed, defensible decisions. In addition to other thinking processes, technology includes: gathering and identifying information, classifying and organizing, summarizing and synthesizing, analyzing and evaluating, speculating and predicting. (p. 5)

On the road to acquiring "skills and attitudes that will serve them well for entry-level work, for further study and for lifelong learning" (p. 5), students should, according to this new curriculum, be able to organise information effectively using spreadsheets and databases, to communicate using electronic mail, to create and navigate a multiple-link document, and to design a multimedia presentation incorporating video, sound, and animation—all by the age of ten or eleven. By the time they graduate from high school, their computer skills and their understanding of how computers affect global economies, communications, and so on, are expected to be quite sophisticated (Alberta Learning, 1998). Seemingly without much question as to the validity of the premises underlying these learning goals, the government has backed this curricular initiative through a massive "re-investment" of funds toward hardware, software, communication networks,

and technical support.[2] Aside from the fact that the premises behind the new curriculum are disputable (for example, empirical research with readers of informational hypertexts suggests that highly networked structures do not facilitate the learning processes of all students), many English educators struggle with the challenge of integrating computer technology in their teaching simply because they are unaware of the various ways in which they might do so. Before discussing the awkward position in which this situation places some teachers, then, it is worth taking a moment to outline some of the possibilities for computers in literary education.

Processing the word

The English classroom, it seems, may be one of the last bastions of Gutenberg, even in spite of the fact that interesting ways of using computer technology in the humanities have been apparent at least since the 1980s when word processors were credited with possessing the potential to change literary education in radical ways. At that time Heim (1987) described the word processor as "the calculator of the humanist," and pondered a question that sounds rather familiar in light of our foregoing discussions:

> Does the conversion of twentieth-century culture to a new writing technology portend anything like the revolutionary changes brought about by the invention of the printing press and the widespread development of literacy? (p. 2)

As might be expected, critical opinion on the issue was divided. Some felt the word, or *idea*, processor augmented human thought processes by easing manipulation of language; others conjectured that word processing represented a threat to literacy and to the mastery of the "predigital word," and pondered whether the advent of digital writing might erode literature and "the culture based on respectful care for the word" (p. 3). Such debate even included a heated interchange among scholars about whether the early graphical interface developed by Macintosh might distract students through an over-emphasis on the iconic,

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[2] Prefaced by the extravagant claim that computer-based tools "will enrich learning immediately," former Alberta Minister of Education Gary Mar released the "Implementation Plan for Technology in Education" in 1996. Among other things, the plan announced the allocation of 105 million dollars toward technology integration in the schools over a period of six years. Additional matching sources of funding were also named in this document (Alberta Learning, 1996).

thereby leading them to write less sophisticated compositions than those written by students using DOS-based IBM machines (i.e., Halio, 1990; Kaplan & Moulthrop, 1990). Although there is still little empirical evidence as to whether computer-based tools for writing augment the thought processes of the mind, most humanities instructors have by now embraced the benefits of manipulating language using the computer. Curt's approval of the Modern Language Association guidelines that instruct students on how to remove the feeder strips from the sides of a printed manuscript, for instance, demonstrate that even in spite of his wariness about how hypermedia may affect attention span, he nevertheless has accepted the computer as a useful tool for composition.[3]

Possibilities for the employment of computer technology in present-day English classrooms of course go far beyond word processing: from enabling access to digital reproductions of heretofore inaccessible medieval and early modern manuscripts, to allowing students to search for patterns of meaning in an electronic text of a literary work by using concordance software, to providing a way for readers to represent their understandings of literary works through multimedia presentation. Each of these uses offers a new perspective on literacy and literature. Above all, however, has hypertext itself been promoted as the language tool that will transform the whole of literary education.

On hypertext and pedagogy

Examining Landow's (1997) claims about the pedagogical benefits of hypertext provides a good overview of the possibilities that have been envisioned for hypertext as a teaching tool in English language arts classrooms. Landow began using Intermedia, an extensive hypertext system developed in the mid- to late-1980s by researchers at Brown University, to teach English in the spring semester of 1987 (Keep, C., McLaughlin, T., & Parmar, R., 1995). The constructive, and hence collaborative, hypertextual network that ultimately grew out of this course allowed students to access both primary and secondary literary materials and permitted them to make their own contributions—both in terms of

[3] His MLA instruction sheet (cited from Hacker's [1996, p. 49] summary for first-year composition students) also demonstrates, interestingly, the speed of change in the computer industry: dot-matrix printers with tractor feeders are already a technology of the past.

written material and in terms of links—to the "docuverse" where desired.[4] Although funding cuts and an incompatible update to the Apple operating system on which it ran forced discontinuation of Intermedia in 1992 (Keep et al., 1995), the system has since gained almost mythical stature in humanities computing and educational technology circles largely by means of Landow's promotional writings.

His general premise, which underlies much of the current thinking about hypertext as a pedagogical tool, is that hypertext systems like Intermedia free students from the so-called oppressive atmosphere of teacher-centred classrooms:

> One chief effect of electronic hypertext has been the way it challenges now-conventional assumptions about teachers, learners, and the institutions they inhabit. It changes the roles of teacher and student in much the same way it changes those of writer and reader. Its emphasis upon the active, empowered reader, which fundamentally calls into question general assumptions about reading, writing, and texts, similarly calls into question our assumptions about the nature and institutions of literary education that so depend upon these texts. (Landow, 1997, p. 219)

Landow outlines a number of areas in which teaching using hypertext benefits students of language and literature: it promotes critical thinking, empowers students, eases the development and dissemination of instructional materials, facilitates interdisciplinary work and collaboration, breaks down arbitrary and elitist textual barriers by making all text worthy and immediately accessible, and introduces students to new forms of academic writing (Landow 1997, pp. 219 ff.). In the following sections I should like to draw out and critique some of these claims for hypertext.

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[4] The term *docuverse* was coined by Ted Nelson (1981) to describe an electronic library of interconnected documents.

Critical thinking and intertextuality

As teachers of English language arts at the secondary or post-secondary levels, one of our primary goals is to encourage students to think critically. Landow (1997) observes that a "major component of critical thinking consists in the habit of exploring how various causes impinge upon a single phenomenon or event and then evaluating their relative importance . . ." (p. 225). Unfortunately, traditional approaches to teaching literature often frustrate the development of critical thinking skills by compartmentalising learning in an arbitrary fashion. In secondary schools, for example, English language arts classes are often divided into discrete units based on genre. Although instructors may attempt to make connections between their drama, poetry, novel and short story units, a number of outside factors, such as the need to finalise assessment before the end of reporting periods, reinforce arbitrary unit boundaries. The same holds true of chronologically organised courses, such as the first-year English literature survey, wherein stylistic or thematic connections between texts studied early in the first term and those studied late in the second are rarely made. While developing thematic units or courses may ease this situation to some extent, texts read throughout the year still exist in physical isolation from one another, and thematic units can also be problematic insofar as they tend to emphasise one overriding connection to the exclusion of others.

Hypertext, according to critics like Landow, offers a way of bettering this situation by removing the physical barriers of print technology. The strength of the myriad of connections in a well-linked hypertext corpus is that they may be varied, overlapping, and complex. In the Intermedia corpus, for example, the connections (links) were made in the first instance by Landow (1997) and his research assistants, but ultimately, hundreds of student readers added links to the document in the course of the next four years, and these stood as catalysts for discussion and investigation (pp. 235-236).

Using this model as a basis for our imaginings of the future of hypertext in literary education, we might envision a comprehensive and highly networked global library containing both primary and secondary texts through which students might

browse and discover for themselves the interconnectedness of literature.[5] It is not difficult to picture concrete examples of how such a network might break down arbitrary boundaries and promote higher-order thinking skills. In the course of examining an on-line version of *Merchant of Venice* in this futuristic global library, for example, students might follow a link from the simple rhyme that the Prince of Morocco finds in the golden casket in Act II—"All that Glisters is not gold,/Often have you heard that told" (II.vii.65-66)—to a number of related primary sources, in the process discovering that echoes of the prince's lines reverberate across centuries of literature, from Chaucer, through Lydgate, to Gray (1748/1983), who parodies the sense in "Ode on the Death of a Favourite Cat (Drowned in a Tub of Goldfishes)": "Not all that tempts your wandering eyes/ And heedless hearts is lawful prize;/ Nor all that glisters gold" (ll. 37-42). Indeed, the phrase even appears, reversed, in *The Lord of the Rings*: "All that is gold does not glitter,/ Not all those who wander are lost" (Tolkien, 1954, p. 265).[6] While it might be contested that alerting readers to such links may be achieved just as easily through the use of footnotes, there remains a difference: allowing readers to explore connections on their own transforms learning into an act of discovery. As Bruner has pointed out, finding relationships that exist within a body of information of one's own accord is far more meaningful than being told of them by someone else: such learning, he posits, facilitates transfer and retention, and increases problem-solving ability and motivation (Bruner, 1961). Of course, there also exist potential drawbacks to the electronic library envisioned above; for example, as my own research shows, some distinctive characteristics of

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[5] Unfortunately, this is in some respects a utopian vision: copyright laws and the digital divide between the haves and have-nots in today's global economy ensure that building a comprehensive, publicly accessible, online library is a challenge strewn with significant obstacles. Nevertheless, several groups are working toward this project on various levels. Project Gutenberg (http://www.gutenberg.net/) has made freely available thousands of electronic texts, as has the Internet Public Library (http://www.ipl.org/), although links between the documents have not been established. Willinsky (1999) has also developed a model for making publicly accessible scholarly work in a networked environment, and is in the preliminary stages of putting this model to practice (see http://www.pkp.ubc.ca/sun/).

[6] See, for example, Chaucer's (1975) "The Canon's Yeoman's Tale": "But al thyng which that shineth as the gold/ Nis nat gold, as that I have herd it told" (ll. 962-964)—and Lydgate's (1911) "As a Mydsomer Rose": "Al is nat gold that outward shewith bright." I should here thank my professor of eighteenth-century poetry for occasioning in me a lifelong alert to the echoes of this expression throughout literature (as well as to the perils of darting impulsively after shiny objects) by assigning me Gray's poem to memorize.

literary reading such as personal engagement may be hampered in the hypertext environment. I shall return to this matter shortly.

Joining strength to strength

Along the lines of intertextuality, Landow (1997) points to another of hypertext's potential benefits: that its connectivity has the potential to break down the conventional, elitist textual boundaries that have been established through several centuries of print. By removing the "gatekeepers of the fortress of high culture" (i.e., scholars and publishers), online textual compilations may become far more inclusive than print anthologies (p. 245). No longer bound by the opinions of (say) Norton editors, instructors might make available to their students works that have been heretofore eschewed by the academy.

Not unexpectedly, some dispute that the removal of these "gatekeepers" is an ominous event, heralding the beginning of the literate world's descent into a maelstrom of anti-aestheticism. Bloom (1994), for instance, declares it to be unfortunate that, in a foolish attempt to "assuage displaced guilt," scholars from what he refers to as the "School of Resentment" (Feminists, Afrocentrists, Marxists, Deconstructors, and so on) are now fleeing aestheticism (pp. 17-20). Their collective efforts to "open up" the canon, in his opinion, can be viewed as misguided at best, "for there is nothing so essential to the Western Canon as its principles of selectivity, which are elitist only to the extent that they are founded upon severely artistic criteria" (p. 21). The canon, he concludes, has always been open, but only "strength can join itself to strength" (p. 39).

And yet, while an extreme move away from any form of aesthetic criteria for judging literature may be problematic, it is equally problematic to diminish, as Bloom does, the effect of political or arbitrary forces on the establishment of literary worth. The chronic exclusion or under-representation of female writers from the anthologies that have been the keystones of undergraduate literature classes, for example, cannot reasonably be attributed to there being a lack of quality writing by women authors. Nor can the development of the North American high school canon be attributed primarily to aestheticism. Unfortunately, school teachers are often even more constrained by the forces of canonisation than are their teaching colleagues in the universities, who generally have the opportunity to choose texts students are required to purchase from a

range of available resources compiled by publishing houses with different political and aesthetic agendas. Teachers who are situated in institutions that rent texts to students, conversely, often must make do with what is on hand, particularly in times of budgetary restraint. And even in the instance that funds are available for purchasing new class sets, those who are most likely to be the catalysts for curricular rejuvenation, beginning teachers, commonly have the least power to influence the decisions of departmental book buyers. Further, newer members of the profession seeking to make their first hectic teaching years manageable not infrequently resort to borrowing and modifying unit plans from senior colleagues that are based on existing school texts. Thus the *status quo* is perpetuated.

While the existence of a universally accessible, comprehensive, and highly networked global library may yet seem distant, developing hypertext course materials on a smaller scale using freely available electronic texts is already feasible within the limits of copyright law, and has the potential to offer instructors the opportunity to build and to supplement their own resources without being constrained by established book buying traditions. [7] By expanding the range of texts available beyond those deemed worthy by the "gatekeepers," and by placing those various texts in immediate relation to one another devoid of their iconographic trappings (publishing house symbols of status and so on), we might step, tentatively, toward the development of a more inclusive curriculum.

Although this is an admirable goal, however, the learning and reading environment pictured here again returns us to the question of how reading processes might change for students working in such an environment. As we have seen, there is evidence to suggest that some readers would benefit more than others from networked learning spaces (i.e., subject-area experts [Jacobson and Spiro, 1995], or "cognitively flexible" learners [Spiro et al., 1994, p. 603]). Indeed, hypertext theorists' vision of

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[7] In the United States, copyright on a creative work "endures for a term consisting of the life of the author and 70 years after the author's death" (United States Copyright Office, 2001, § 302, ¶ 1). In most countries, the term is similar if not the same, while in Canada it is slightly less: life plus fifty years. Therefore, works by authors deceased before 1931 are, according to current law, in the public domain and might be included free of charge in electronic materials posted for students. While this scenario makes available to teachers a wealth of material, however, it also ensures that problems of canon will continue on another level: at the moment contemporary authors are represented hardly at all online, while already canonised authors are best represented of all.

empowered learners clicking their respective ways to intellectual prowess almost always ignores or glosses over the complexities of learning theory. Witkin and his colleagues, for example, have identified differences among learners respecting the extent to which they are distracted by the context in which learning occurs. The research team distinguishes between two cognitive dispositions: "field dependent" and "field independent" (Witkin, 1969; Witkin, Moore, Goodenough, & Cox, 1977). In this scenario, *field* refers to the context in which learning occurs, and the extent to which a learner depends on or is distracted by that context. Field dependent learners, while not necessarily less capable, are disadvantaged when material lacks organisation (Witkin et al., 1977), and are also thought to have more trouble during the early stages of reading (Sunshine & DiVesta, 1976). As stated earlier in this document, studies of how learners with different cognitive styles might fare in highly networked hypertext spaces are sparse; moreover, with respect to literature, there are few careful examinations of how the distinct processes and motivations involved in reading literary text might be affected by hypertext structures. To return to our fictional readers of *The Merchant of Venice*, how would their understanding of the play be modified if their reading processes were punctuated by repeated, possibly extended, ventures into supporting materials? Likely those already familiar with the drama (the subject-area experts) would benefit from following links to Lydgate, Chaucer, Gray and Tolkien, but might something of the power of the text be lost for those reading it for the first time?[8] Landow, who cheers the erasure of boundaries (cf. p. 65), would say *yes, and rightly so!* But my own studies suggest that some important literary reading processes such as absorption and personal reflection may be disabled in the hypertext environment, and that we would do well to know precisely what it is we are discarding before we make the trip to the curb.

Out of the margins: Hypertext and the new (?) pedagogy

Another of Landow's premises is that hypertext learning environments empower students and decenter teachers in three ways. First, students become active "wreaders"—writer/readers—in a hypertext environment (p. 255): they may pursue their own interests

[8] This is in fact a poor example given that one would hope a student's first encounter with a drama would be on stage; nevertheless, the question remains the same: is anything important lost when we, to use Landow's phrase, disperse the text (cf. p. 65)?

at their own pace by following links that are of interest to them. In this way, they not only *read* the text, they *write* it by shaping its direction. Second, in a constructive environment they may add their own commentaries to the corpus, and those commentaries, situated alongside the writings of the authors they are studying, of scholars, and of their teachers, stand as records of their presence in the academic discussion. Students are thereby invited to write for a real audience comprised of their immediate peers as well as of students in other courses who are using the web simultaneously, or who will do so in future years. Landow remarks that this serves to put them soundly within the scholarly debate (p. 220); for they are no longer relegated to unseen margins as when they make notations in their own personal volumes, or when they scribble an anonymous comment in a library book or in a rented school text during the course of a class. Third, using a constructive hypertext as a learning tool also empowers students by forcing instructors to move away from didactic, teacher-centred, styles of instruction; instead, they become facilitators in the constructivist, collaborative activity of building a web of ideas.[9]

Furthering this spirit of collaboration is the way in which hypertext eases the development and dissemination of instructional materials and facilitates interdisciplinary work and collaboration among both instructors and students. Instructors who make course material freely available online not only make that material accessible to a wider group of students—including, potentially, distance learners and interested lay persons—they also make it available to other instructors who in consequence might spend time adapting and improving a body of existing teaching materials rather than developing new materials. And just as instructors from various disciplines may collaborate in developing teaching materials, so might their students collaborate in the act of building a corpus of secondary material. Moreover, they might use each other's writings as catalysts for discussion and writing, a form of collaboration that is generally precluded by the

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[9] Landow also stipulates, however, that student contributions to the webs at Brown are culled such that only those deemed of high enough quality are added to the docuverse. "I do not add all student writing to the HTML versions of webs originally created in courses," he remarks; although he does require all students to hand in paper and HTML versions of their work so that those who write "the finest essays" are not in consequence required to do more work (p. 235). Interestingly, he apparently does not have in place any process by which students whose essays are not "refined" enough to be included on the web might work at getting them that way. Landow's notion that hypertext breaks down the hierarchical barriers of aestheticism (pp. 245-255) is therefore questionable in the context of his own use of the web: only students who are talented enough, after all, are really *in* the critical debate.

traditional method of submitting individual "papers" to a particular instructor. Landow observes that if the hypertext documentation supporting a course is set up in such a way that students from various courses encounter the materials used and written by students in other courses, then the collaboration becomes far reaching because students do not restrict themselves to examining essays written solely by their immediate peers (p. 239). A research model that envisions discovery as the product of collective thought, rather than of the isolated and guarded activities of competing researchers (the model which is, unfortunately, encouraged by the current funding and promotion strategies of modern-day research institutions), is thereby established.

Landow (1997) observes that this model of learning is refreshing in that it requires instructors to remain flexible and open to the contributions of their students. In particular, they must be willing to allow their students' interests to change the nature of course content and emphasis (p. 230). Of course, maintaining flexibility in the interest of meeting student needs is by no means a new concept to educators (as Landow irritatingly insinuates). This, after all, is the theoretical standpoint behind the movement toward student-centred learning that began in the 1960s (cf., Rogers, 1969; Maslow, 1970; Combs, 1965); it is the premise underlying the widespread introduction of individualised instructional plans (known by various names) at all levels of schooling in North America; it is more often than not one of the first topics to be discussed in introductory teacher education courses, and has been for some three decades. Nevertheless, Landow's point is well taken: the connectivity of hypertext makes entirely teacher-centred approaches far less feasible, for students who are invited to read literary works on-line are more likely to take divergent paths through assigned readings. For learners who fare well in such environments, hypertext thereby promotes another type of collaboration: that of instructor and students in the process of developing a meaningful course of study.

Writing matters

Landow's (1997) final pedagogical claim for hypertext is that it enables students to experiment with different forms of writing, academic and otherwise (p. 256). As teachers of language and literature, we examine with our students many forms of text: poetic, dramatic, narrative, didactic, and so on. Ideally, we should also, all through the

course of their formal education, provide students with ample opportunity to attempt writing in these various forms. Historically, however, there is a marked narrowing in the type of writing assignments given in English language arts courses as students progress through the public education system: creative writing assignments are supplanted by reports, which are in turn supplanted by the critical, or academic, essay. Maxwell and Meiser (1997) remark on this trend, and observe that a serious consequence of this reality is that students come to understand that their own ideas are not important. The common prohibition against the use of *I* in critical writing serves to underline this understanding; as Maxwell and Meiser note, "when the writing must not reflect the identity of the writer, the students' importance diminishes greatly. The message students get is that they do not count, and what they think does not matter" (p. 157). In spite of protests by teacher educators, the move away from creative writing in the higher grades has been reinforced in the last few years by the explosion of standardised testing. Thus, in middle or secondary school in North America the five-paragraph essay structure continues to be the most popular expository form (Speer, 1995).

Clearly this conventional structure is challenged in a fundamental way by technologies that allow for non-linear representation of text. As Landow (1997) observes, the innovative hypertexts that his English students construct demonstrate "more clearly than could any theoretical argument that writing in this medium creates new genres and new expectations" and that "new kinds of academic writing [are] taking form" (p. 256). Obviously hypertext writers cannot rely on organisational structures that presume readers will peruse the text in a specified order, and then abdicate responsibility for those who do not. Instead, hypertext invites students to expand their understandings of how academic writing—indeed, how all forms of writing—might be conceived. In Landow's experience, the multisequential writing space prompts students to attempt projects rarely undertaken by those who must submit assignments on paper: they annotate literary texts, make extensive use of innovative rhetorical devices such as appropriation and abrupt juxtaposition, integrate different mediums such as sound and image, experiment more readily with creative forms, and merge creative and critical writing (pp. 256-258). Moreover, they are forced to become much more cognisant of their authorial roles, as well as of how their own texts sit in relation to the immediately surrounding texts,

whether those works are the writings of other students, academics, poets, novelists or essayists.

Using hypertext in teaching composition thus encourages us to break with traditions that stifle imagination by making writing formulaic. When we further consider that functional literacy in the twenty-first century already entails an understanding of how to read and write electronic texts, and that this will increasingly be the case, we see how important it is that we begin to integrate electronic textual forms in our teaching of language and literature. To this end, Dryden (1994) summarises the benefits of hypertext in the English classroom thus:

> for those of us involved in literacy education, hypertext's polyvalence—its integration of multimedia and its invitation for students to use cognitive skills not traditionally associated with the study of literature—supports an enlarged view of literacy in the worlds inside and outside academia that are becoming, whether we like it or not, simultaneously more diverse and more interdependent. In this regard, hypertext helps us achieve a number of commendable, progressive educational goals. (p. 286)

Re-viewing Landow

Clearly Landow has had no small degree of success teaching using hypertext resources over several years, and I have no reason to doubt that the claims he makes about its usefulness in the classroom are true within the context of Brown University. Yet, while the picture he paints for hypertext and literary education is generally pleasing, upon reviewing his claims from the point of view of teachers such as Ellen, some cracks in the canvas emerge. In Landow's description of his teaching methodologies, we may discern a number of things: Intermedia was conceived and developed by a group of technology experts; the project was handsomely funded by industry and by Brown University; the students had regular access to updated computer laboratories where they were able to work on the system; technical support was readily available within these settings; Landow had substantial help (at least four graduate students) in preparing the

course content. But to return to Ellen's situation, how might this situation translate to the public school system?

On the in-school digital divide

Although the development of Intermedia entailed extensive research and substantial funding fifteen years ago, the software required to build a comprehensive hypertext system today is freely available and easy to use. Replicating something approximating Intermedia would therefore not be beyond the financial capabilities of any school with reasonably updated hardware and even a single networked laboratory. Nevertheless, as Ellen's narrative attests, there are a number of factors—beyond the obvious incongruities between Brown and any public school in terms of funding and technical and academic support—which make problematic the undertaking of such innovative projects on a large scale in the public school system. The most significant of these has to do with the extent to which teachers are ready to use digital tools in their classrooms.

Ellen observes that she has long faced the prospect of teaching talented students with varied academic backgrounds and lofty goals. Far from being disturbed by this reality, she has always encouraged her students to integrate their outside interests and talents in their learning about literature. But Aaron elicits in her emotions that, unwelcome, run counter to her understandings of pedagogy and professionalism. Clear in her discussion of this subject is that her feelings toward students such as Aaron stem at least in part from the fact that she has become a victim of a form of in-school *digital divide*. This phrase, coined by James Katz (Katz, 1997; Katz & Aspden, 1997), describes the social and economic rift worldwide between those people with access to computer technology and those without. When we examine the situation faced by teachers, we may see that a form of digital divide also exists in the public school system, wherein a rift has developed between educators, who are exceedingly well-versed in print literacy, and their students, who are exceedingly well-versed in media literacy.

Aged forty-two, Ellen is currently one of the younger teachers in the Canadian secondary school system.[10] Like many of her colleagues, she undertook her formal education well before the rise of personal computers, before the VCR was available widely commercially, before the rise of xerography. Beyond books and blackboards, the primary technologies for learning to which she was exposed in the course of her teacher education in Alberta were projectors (overhead, film, slide and opaque), tape recorders, lamination, and the like. Although photocopiers were appearing in some of the wealthier schools, mimeographs, or "Spirit Duplicators," and Gestetner machines remained the primary method of reproducing paper materials for students. "Media literacy" was rarely discussed, although a push toward including film studies in the English curriculum by a core group of Alberta high school teachers shortly after Ellen's graduation was reflected in the 1982 English language arts curriculum when "viewing" was introduced as a key learning strand (Alberta Education, 1982).

Since Ellen began teaching in Alberta in 1979, technologies for learning have changed radically, arguably more so than at any other point in the history of formal schooling. Moreover, such technologies have not only proliferated, they have became increasingly complex. Compare, for example, the introduction of the paper notebook to the introduction of the computer. The transition from slate to paper in the early part of the twentieth century certainly changed teaching methodologies in North America in some substantial ways: notebooks enabled students to keep records of their learning and, as paper and texts became more affordable, rote learning became less necessary. But while the methodological changes this shift produced were complex, the technology itself was not. Computers, on the other hand, are complex machines with multiple applications, and therefore learning to use them efficiently is not a simple task. Sadly, governments and boards of education have grossly underestimated the importance of keeping in-service teachers abreast of the rapid changes in learning technologies during the last part of the twentieth century.

Consider, by way of example, how Ellen came to possess her understanding of computers. She bought her first computer, a Mac Plus—or "Mac Ed" as it was dubbed for

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[10] The average age of teachers (elementary and secondary) in Canada is now 42.6. In the secondary system, it is higher [data coming from Stats Canada] (Statistics Canada, 2001b).

the education market—in 1987 at a discounted price of over $2500.00 CAD through her school board. By the time she had added the necessary accessories, such as a printer, she had spent more than 15% of her annual income after taxes on this machine. Training was not easily accessible, and so she struck a bargain with one of the school office staff: after-school English tutoring in exchange for computer training. Ellen, who remains a novice computer user, thereby became one of the first instructors in her large urban high school to make use of digital technologies in her teaching. She did so on her own initiative, and at her own cost, both financially and personally. In the course of her ten-year term (1986-1996) teaching at an institution that is deemed one of the top academic high schools in the province of Alberta, is part of one of the largest and richest provincial boards of education, and is situated in an urban area with a catchment of over one million people, she recalls a total of three two-hour afternoon technology sessions offered during paid professional development time. All demonstrated how computers might be used to ease administration (the topics were spreadsheets and electronic mail for use in distribution of memorandums), not to enhance teaching. Further, there was no opportunity offered to put the skills taught to practice: the marks programme demonstrated in the sessions was not made available to teachers, and the solitary computer provided by the school for use by its fifteen English teachers was so outdated that it did not have network capability. The technology training opportunities to which Ellen did have access were thus ill-conceived, dropped into teachers' lives from nowhere with little forewarning and no follow-up.[11]

This reading of technology integration in Alberta schools in the past fifteen years is supported by studies conducted by local researchers. For example, Gibson and Oberg undertook a series of examinations of Internet use in Alberta schools in the late 1990s (Gibson & Oberg, 1997; Gibson & Oberg, 1998; Oberg & Gibson, 1999). They asked district superintendents to provide the names of six schools on the basis of high Internet

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[11] Of course, this situation was not the case in all schools. In the early to mid-1990s a handful of facilities were targeted as technology centres. These provided all teaching staff with personal computers and regular training sessions even as early as 1992. In my own experience teaching in one of the most advanced technology schools in the province during the 1992-1993 academic year, however, faculty were (as in Ellen's case) introduced primarily to administrative software designed for keeping class records and for uploading personalised teacher comments to report cards. Thus, while the government pushed the integration of technology into the curriculum—something deemed immediately beneficial to students—training and direction for teachers in this regard was limited even in schools with a technology focus.

use, and then conducted in-depth case studies of these schools that entailed the collection of data about how teachers were using the Internet, how they learned to use it, and about their perceptions of its value as an educational tool. Subsequently, they sent out a province-wide survey of Internet use by educators to 300 schools. Their findings demonstrate that the experiences of teachers such as Ellen are the norm rather than the exception: even in institutions where computer use is deemed high, training opportunities often fail to meet the needs of teachers in a number of ways.

The case studies of the six high-Internet-use schools, for example, showed that teachers tended to rely on their more experienced colleagues for training, and that their learning "was limited by a lack of time and by a lack of suitable inservice opportunities" (Gibson & Oberg, 1999, p. 23). The survey data revealed that while the majority of teachers felt positive about the possibilities for computer use in the schools, and expressed a desire to integrate the technology in their own teaching, they also felt they had been abandoned to their own devices in this regard:

> They were interested in the Internet and wanted to learn to use it as a tool for teaching, but fewer than half of them had Internet access in their classrooms. About half of the teachers felt that they were not getting adequate support from their district for learning about the Internet and for [getting] technical help. Many teachers were exploring the Internet on their own, primarily through trial and error. About two-thirds reported attending school or district inservices related to the Internet, but the majority found these inservices unsuited to their learning needs. (p. 23)

The results showed no significant difference in accessibility and technical support between rural and urban areas. Gibson and Oberg (1999) conclude that teachers' learning about computer technology is chaotic, tending to involve "highly individualised and isolated activities taking place on the edges of busy lives" (p. 23).

Given the way computers and computer training have been made available to educators, belatedly and often in haphazard fashion, teachers like Ellen have become the "have-nots" in secondary schools where computer labs and computer courses for students

generally pre-dated the introduction of computers and computer training for teachers. This in-school digital divide has been only partially alleviated by recent steps to equip teachers with hardware because access to quality training, as we have seen, is still problematic. It follows that many teachers avoid using computer technology in their classrooms and struggle with students like Aaron not because they are unwilling to relinquish authority (cf., Landow, 1997), but because they are troubled by the notion that they lack the experience to facilitate learning in a digital environment. Moreover, this problem will not simply "grow out of the system" in the near future. Educators like Ellen will be in the classrooms for at least another twenty years, and this much is certain: they have much to offer their students. We can only hope that their employers will not abandon them on the far side of a rift that yet grows wider, for, ultimately, if computer technology and training is not integrated in a meaningful fashion into the working lives of such teachers in very short order, the likelihood is slim that they will ever find ways of integrating it in a meaningful fashion into the curriculum for which they are responsible.

Crossed signals: Innovation meets standardisation

Landow (1997) observes that "dissatisfaction with American secondary school students' ability to think critically has recently led to a new willingness to try evaluative methods that emphasize conceptual skills—chiefly making connections—rather than those that stress simple data acquisition," and that hypertext is an ideal educational tool in this respect because it "forces instructors to rethink the goals and methods of education" (p. 232). He adds, "if one wishes to develop student skills in critical thinking, then one might have to make one's goal elegance of approach rather than quantitative answers" (p. 232). While it is true that employing evaluative methods that emphasise conceptual skills might encourage in students the ability to think critically, Landow's apparently limited understanding of the forces that conspire to encourage particular teaching methodologies in the public school system is surprising to say the least, and points to another difficulty faced by teachers as they prepare to embrace the new curriculum.

When we meet Ellen, she is worrying about assessment, an issue that haunts her on a number of levels. As usual, her first concern is about time: however will she find enough of it to assess her students' work carefully and fairly? But more important on this

occasion is the question of how she will assess Aaron's hypertext, a document for which she has no standard against which to set her measure. Curt's exaggerated responses to Ellen's dilemma serve to underline an essential paradox faced by today's teachers: while researchers call on them to be "elegant" in devising innovative methods of instruction and evaluation that will encourage multiplicity of thought, those who have an immediately measurable effect on teachers' and students' lives are often calling for something markedly different.

In his own teaching, for example, Curt is influenced strongly by two factors, both of which might be deemed by Landow "inelegant" in their rigidity: the expectations for student work common in institutions of higher learning in his locality, and the government-imposed standardised school-leaving examination in English. Indeed, so focused is he on the second mil(e/l)stone, that it tempers his teaching even from the first day of class. Although his practice of beginning senior English with the final exam is distasteful to Ellen, it is clear that Curt feels his actions are honourable because he is helping his students succeed, if only in the short term. He assumes from the start an "us against them" mentality and, cheered by the student body, fights to overcome the enemy. In doing so, however, he ironically subscribes to the cause he so despises.

Landow may be right in his claim that one of the pedagogical goods of hypertext is that it encourages innovation in the creation and assessment of assignments, but as long as ministries of education around the world continue to support standardisation in the school system, this is a pedagogical good that will remain largely untapped. Clearly when teachers' success, or lack thereof, is judged in a large degree by the results their students obtain in outside examinations, it is only to be expected that they will respond by spending increasing amounts of time focusing on preparing their students for that exam to the exclusion of more innovative instructional and evaluative approaches.[12] Realistically, teachers in many regions are trapped by the schizophrenic stand of governments that, to cite the Alberta documents, promote the use of technology because it "provides us with

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[12] In fact, this response can be documented in many Alberta high schools where midterm and final English exams for all grades are modelled on the two-part provincial exam students are required to take on completion of their senior high school English course. Moreover, students are frequently given variations on the marking key for the written portion of this exam in their first high-school year, and are coached until school leaving in how to write effective answers to questions pulled directly from previous exams.

techniques and processes to think differently" (Alberta Learning, 1998, p. 5), while simultaneously promoting standardised testing because it provides a way of ensuring that students are "learning what they are expected to learn" (Alberta Learning, 2000, n. p.). If we accept that a positive outcome of the use of technology in English language arts is that it will, among other things, encourage students to think in original ways including re-conceiving formulaic approaches to writing, how can we then in good conscience administer a final test requiring markers of the formal writing assignment to look for a "coherent, focused, and shaped discussion in response to the assignment" as well as a "concluded" argument (Alberta Learning, 2001, n. p.)? As we have seen, innovative hypertext challenges conventional notions of coherence and conclusion in some significant ways. What, then, would be the outcome were a student such as Aaron to attempt to incorporate the principles of hypertext structure in his final provincial exam? One would hope that his paper would not fall into the hands of markers like Curt, but it is more likely than not that this would be the case. Ultimately, Landow's lesson for teachers in conceptual thinking is gratuitous; rather than speaking of how hypertext will *force* his colleagues in the secondary system to rethink their practices, he might more productively devote his energy to lobbying the political bodies that force teachers to employ quantitative approaches in the first instance.

Crossed signals II: Bradley meets Bakhtin

It is worth noting here that the reluctance of some secondary educators to embrace the new medium also stems from a fundamental disjuncture between the theoretical underpinnings of hypertext pedagogy as described by scholars like Landow and the beliefs of many secondary instructors, particularly those who completed their university educations more than fifteen years ago. As Hansson (1992) observes,

> it takes a long time—20, 30 or even 40 years—for a new approach in literary research to find its way into school teaching and to gain a dominant position there. And when it becomes dominant in the schools, it is often outdated and abandoned by academic research and criticism. (p. 147)

Hansson makes this observation on the strength of an empirical study completed by one of his doctoral students that traces the theoretical approaches to literature employed by Swedish students in school leaving exams over the course of 100 years. He attributes the inertia in the Swedish system to there being no set requirements for in-service teacher training: once teachers complete their training, he observes, they might "lock the door to [their classrooms] and go on for another 30 or 40 years, transferring to ever new generations of students the only approach [they] had been trained to use" (Hansson, 1992, p. 147). This vision is perhaps overly pessimistic in its insinuation that school teachers are not inclined to pursue further education of their own volition; for there are many dedicated educators of young people who are highly motivated life-long learners. Nevertheless, there is some degree of truth to this assessment. In the North American system, perhaps the most poignant example of such stagnation is the pervasive teaching of Bradley's (1909/1959) theory of Shakespearean tragedy in the secondary system, an approach that has not been taught widely at the university level for decades. To return to the question of hypertext, we might well imagine that Curt, a self-described humanist and champion of Northrop Frye, might have difficulty seeing merit in a medium that seeks to overturn ideas that are central to his pedagogy; notions such as the universality of human experience, for example, clearly have no place in a medium that, according to Landow (1997), "does not permit a tyrannical, univocal voice" (p. 36).

Technology in ruins

During my original discussions with Ellen I was struck by the distaste she expressed for her teaching environment, for the faded walls, the grimy windows, the smudges around the heating vents, and the stains on the ceiling. The school in which Ellen teaches is in a low-income area, but is part of a comparatively wealthy district situated in the capital city of the richest province of Canada. It is also well known for its unique performing arts programme, which draws students from around the province. Nevertheless, its administration has battled for subsistence funding through a series of economic downturns, and the structure is now in such disrepair that it has very recently

been slated for demolition.[13] This is ironic given the school's role in this dissertation, but it is also telling: on the face of it, our institutions of learning would appear to be crumbling under the weighty cost of technology. While funds are not forthcoming for building maintenance, millions are spent on equipment, software, and communications systems that quickly become outdated. And this situation is not localised; for example, in a public lecture, Postman (2000) gave a poignant example of how in some cases education dollars are being "re-invested" at the expense of basic needs: at a time when many New York schools were in serious disrepair, 90 000 students were without desks, and some classes were actually meeting in the washrooms, the New York School Board sought special funding—not to tend to these problems, but to wire classrooms to the Internet.

Of course, it is too simplistic to suggest this money would otherwise have been spent on building maintenance, but such decisions nevertheless send a message to those who must work and learn in poor conditions: that is, teachers' and students' immediate personal welfare is second to the political agendas of governing bodies that find it more politically expedient to attract voters' and patrons' attention by investing in technologies that are not yet known to improve learning than to invest in less-alluring causes that are known to improve learning.[14] In the final analysis, there is more to some teachers' reluctance to embrace technology than a simple aversion among educators to leaving go of the conventional authoritarian role of the teacher. Given the complexity of the current situation with respect to technology integration in the schools, it is not hard to understand why some (i.e., Postman, 1992; Birkerts, 1994; Stoll, 1995; Schwartz, 1997) portray computers as interlopers that are siphoning time, energy, and resources from more worthy causes.

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[13] According to a recent provincial audit, the school, built 53 years ago and home to 1 800 students, requires at least $17 million dollars worth of upgrades (Unland, 2001).

[14] Maslow's (1970) well-known need theory proposes that there are basic and meta-needs. Among the former are physiological needs, which include food and shelter, and safety needs, and which are manifested in the human tendency to maintain non-threatening environments that are sociable, clean, and orderly. Among the latter are the aesthetic and cognitive urges associated with the acquisition of knowledge. Maslow argues that meta-needs cannot be properly addressed until basic needs are taken care of; therefore, attending to basic needs does more than improve learning—it makes learning possible.

The future of hypertext

At the end of Landow's (1997) discussion of hypertext in the classroom, he puts a question that worries almost everyone who is seriously interested in how new electronic textual forms will affect literacy and literary education in future years: "What chance has hypertext in education" (p. 265)? His diction is telling: considering the number of notable literary critics and writers who have damned hypertext—and computers—outright, hypertext's *chances* of being accepted by the academy any time soon seem slim. Further, he observes, the "technological conservatism and general lack of concern with pedagogy that characterizes the faculty at most institutions of higher learning" suggests that educational practises in these settings will be slow to change (Landow, 1997, p. 266).

In the school system, the future of hypertext also seems uncertain, but not for precisely the same reasons. While the pressure for teachers to embrace technology is greater given that they, unlike faculty, are required to meet curriculum standards established by government and are also more susceptible to the demands of business and industry in terms of teaching skills that are "marketable," a number of factors, as we have seen, conspire to make technology integration problematic. These range from questions of access and teacher training to questions that centre on the fundamental disjunctures manifested in the philosophies of education espoused by educational governing bodies.

Today's reality, it seems, is this: competent English language arts teachers possessed, perhaps, of a rudimentary knowledge of computers are being pressured to devise innovative and pedagogically valuable subject-specific projects involving the use of digital technology. Because they have neither the training, nor the support, nor the time to do so, many avoid the issue or resort to the banal: requiring students to complete research papers using library computer resources such as electronic encyclopaedias and the Internet. Such projects clearly do not inspire the sort of interactivity and inter-connectivity evident in projects like Intermedia; on the contrary, students remain in a receptive mode, performing search and retrieval tasks using resources that are limited (as is the case with all encyclopaedias, electronic or otherwise), or unreliable (as is the case with many Internet resources). Although the climate is changing—the necessity of providing teachers with workplace computers to facilitate their own training, for example, has been recognised and is now being addressed in many institutions—it is

hardly surprising that technology is poorly received by some secondary English language arts teachers, and that its future will remain doubtful at least until such time as computer literacy becomes widespread within the profession.

The conclusion in which nothing is concluded

In the meantime, Aaron's vocalisations will continue to be accepted by some and dismissed by others; he will need to find his own way at times, and he will certainly be called on to lead. There is no way of ending his story neatly, for there can be nothing certain about the issues he embodies. As for his teacher, she has determined, like the bookmakers of the fifteenth century, that the new technology does not mean the end of her labours; it merely means the end of a certain method of work. Her interactions with Curt and Aaron have caused her to take stock of her own craft, to determine which practices she might keep and which she might discard in the course of embracing the benefits of new text technologies without abdicating her commitment to literature as an important source of aesthetic and emotional pleasure for readers of all abilities. For the moment, her misgivings about Aaron have ended: in finding a place for technology in her teaching she will be flexible, as she has always been, and she will be moderate, as she knows it is wise to be. In this, she will follow the wisdom of one of her own literary mentors: "All that we can be said to do is to keep moving, now a little in this direction, now in that, but with a circular tendency should the whole of the course of the track be viewed from a sufficiently lofty pinnacle" (Woolf, 1925/1986, p. 1993).

References

Alberta Education. (1982). *Senior high language arts curriculum guide.* Edmonton: Author.

Alberta Learning. (1996). Implementation plan for technology in education. Retrieved July 15, 2001 from http://www.learning.gov.ab.ca/technology/implementation_plan.asp

Alberta Learning. (1997a). *English 30 Diploma Examination Results Examiners' Report for June 1997* [Electronic version]. Edmonton: Author.

Alberta Learning. (1997b). *English 33 Diploma Examination Results Examiners' Report for June 1997* [Electronic version]. Edmonton: Author.

Alberta Learning. (1998). Learner outcomes in information and communication technology. In *Information and communication technology: Kindergarten to grade 12* [Electronic version]. Edmonton: Author.

Alberta Learning. (2000). *Achievement testing: General information bulletin (Section 1).* Retrieved July 15, 2001 from http://www.learning.gov.ab.ca/k_12/testing/achievement/ach_gib/sec1a_purpose.htm

Alberta Learning. (2001). Sample written-response assignments, scoring categories and criteria. In *English 30 subject bulletin—Part A: Written response*. Retrieved July 18, 2001 from http://www.learning.gov.ab.ca/k_12/testing/diploma/bulletins/humanities/eng30_assignment.htm

Alexander, M. (Ed.). (1987). *The earliest English poems.* Harmondsworth: Penguin Books Ltd.

Aristotle. (1982). *The poetics.* (J. Hutton, Trans.). New York: W.W. Norton & Company.

Association of American Publishers. (2001, February 28). Book sales total $25 billion in 2000. Retrieved June 5, 2001 from http://www.publishers.org/home/stats/index.htm

Astleitner, H., & Leutner, D. (1995). Learning strategies for unstructured hypermedia--A framework for theory, research, and practice. *Journal of Educational Computing Research, 13*(4), 387-400.

Atwell, N. (1987). *In the middle: Writing, reading, and learning with adolescents.* Portsmouth, NH: Boynton/Cook Publishers.

Austen, J. (1968). *Northanger abbey.* London: Collins. (Original work published 1818)

Bakhtin, M. M. (1994). *Problems of Dostoevsky's poetics.* In P. Morris (Ed.), (C. Emerson, Trans.), *The Bakhtin reader: Selected writings of Bakhtin, Medvedev, and Voloshinov.* (pp. 88-96) New York: E. Arnold. (Original work published 1963)

Bakhtin, M. M. (1981). *The dialogic imagination: Four essays.* (C. Emerson & M. Holquist, Trans.). Austin: University of Texas Press. (Original work published 1975)

Barth, J. (1967). The literature of exhaustion. *The Atlantic, 220*(2), 29-34.

Barthes, R. (1974). *S/Z.* (R. Millar, Trans.). New York: Hill and Wang.

Bardini, T. (1997). Bridging the gulfs: From hypertext to cyberspace. *Journal of Computer-Mediated Communication, 3*(2). Retrieved July 15, 2001 from http://www.ascusc.org/jcmc/vol3/issue2/bardini.html

Bell, E., Haas, L, & Sells, L. (1995). *From mouse to mermaid.* Indianapolis: Indiana University Press.

Bernstein, M. (1997). Chasing our tales. Retrieved July 15, 2001 from http://www.eastgate.com/tails/Welcome.html

Bernstein, M. (1998). Patterns of hypertext. Reprinted from Proceedings of Hypertext 1998, F. Shipman, E. Mylonas, & K. Groenback, (Eds.), ACM, New York. Retrieved July 15, 2001 from http://www.eastgate.com/patterns/print.html

Birkerts, S. (1994). *The Gutenberg elegies: The fate of reading in an electronic age.* New York: Fawcett Columbine.

Bloom, H. (1994). *The western canon: The books and school of the ages.* New York: Riverhead Books.

Bolter, J. D. (1991a). *Writing space: The computer, hypertext, and the history of writing.* Hillsdale, NJ: Lawrence Erlbaum.

Bolter, J. D. (1991b). Topographic writing: Hypertext and the electronic writing space. In P. Delany & G. P. Landow (Eds.) *Hypermedia and literary studies* (pp. 105-118). Cambridge, MA: The MIT Press.

Bolter, J. D. (1996). Ekphrasis, virtual reality, and the future of writing. In G. Nunberg (Ed.). *The future of the book* (pp. 253-272). Berkeley: University of California Press.

Borges, G. L. (1981). The circular ruins. In E. R. Monegal & A. Reid (Eds.), (A. Bonner, Trans.), *Borges: A reader* (pp. 124-127). New York: E.P. Dutton.

Bowen, E. (1945) The demon lover. *The demon lover and other stories* (pp. 91-99). London: Jonathan Cape.

Bradley, A. C. (1959). *Oxford lectures on poetry.* London: Macmillan. (Original work published 1909)

Brantlinger, P. (1998). *The reading lesson: The threat of mass literacy in nineteenth century British fiction.* Bloomington: Indiana University Press.

Branwyn, G. & Sugarman, P. (1998). Beyond cyberpunk: A do-it-yourself guide to the future. Retrieved July 15, 2001 from http://www.streettech.com/bcptext/manifestos/cut&paste.html

Brooks, L. (1993). Hypertext and science fiction. *Science-Fiction Studies, 20,* 449-456.

Brooks, P. (1984). *Reading for the plot: Design and intention in narrative.* New York: A. A. Knopf.

Bruner, J.S. (1961). The act of discovery. *Harvard Educational Review, 31,* 21-32.

Bryant, W. C. (1962). Lectures on poetry. In C. Norman (Ed.), *Poets on poetry.* New York: The Free Press, 212-249. (Original work published 1884)

Bush, V. (1945). As we may think. *The Atlantic Monthly, 176*(1), 101-108. Retrieved July 15, 2001 from http://www.isg.sfu.ca/~duchier/misc/vbush/vbush.shtml

Chaucer, G. (1975). The canon's yeoman's tale. In A. C. Cawley (Ed.), *The Canterbury tales* (pp. 498-518). London: J.M. Dent & Sons.

Cochrane, P. (1995). A three click one second world. *IEE Electronics & Communication Eng. Journal,* 7(4), 138-139. Retrieved July 15, 2001 from http://www.labs.bt.com/library/cochrane/papers/athreecl.htm

Coleridge, S. T. (1968). *Seven lectures on Shakespeare and Milton.* New York: B. Franklin. (Original work published 1856)

Coleridge, S. T. (1983). Biographia literaria (2 Vols.). J. Engell & W. J. Bate (Eds.). London: Routledge. (Original work published 1817)

Combs, A. W. (1965). *The professional education of teachers.* Boston: Allyn & Bacon.

Culler, J. (1976). *Literary theory: A very short introduction.* Oxford: Oxford University Press.

Dee-Lucas, D., & Larkin, J. H. (1992). *Text representation with traditional text and hypertext.* Pittsburgh: Carnegie Mellon University, Department of Psychology.

Derrida, J. (1976). *Of grammatology.* Baltimore: Johns Hopkins University Press.

Dillon, A. (1996). Myths, misconceptions, and an alternative perspective on information usage and the electronic medium. In J. F. Rouet, J. J. Levonen, A. Dillon, & R. J. Spiro (Eds.), *Hypertext and cognition* (pp. 25-42). Mahwah, NJ: Lawrence Erlbaum.

Dobrin, D. N. (1994) Hype and hypertext. In C. L. Selfe, & S. Hilligoss (Eds.), *Literacy and computers: The complications of teaching and learning with technology* (pp. 305-315). New York: Modern Language Association.

Dobson, T., & Miall, D. S. (1998). Orienting the reader? A study of literary hypertexts. *Spiel, 17*, 249-261.

Donne, J. (1983). The Ecstasy. In A.W. Allison et al. (Eds.), *The Norton anthology of poetry* (3rd ed.) (pp. 106-108). New York: W.W. Norton & Company. (Original work published 1633)

Douglas, J. Y. (1992). Gaps, maps and perception: What hypertext readers (don't) do. *Perforations, 2*(3). Available from http://www.pd.org/topos/theory/perf-frame.html.

Douglas, J. Y. (1994). How do I stop this thing? Closure and indeterminacy in interactive narratives. In G. Landow (Ed.), *Hyper / Text / Theory* (pp. 159-188). Baltimore: John Hopkins University Press.

Douglas, J. Y. (2000). *The end of books--Or books without end? Reading interactive narratives.* Ann Arbor: University of Michigan Press.

Dryden, L. M. (1994). Literature, student-centered classrooms, and hypermedia environments. In C. L. Selfe & S. Hilligoss (Eds.), *Literacy and computers: The complications of teaching and learning with technology*. New York: Modern Language Association.

Eagleton, T. (1983). *Literary theory: An introduction*. Minneapolis: The University of Minnesota Press.

Emerson, R. W. (1962) The poet. In C. Norman (Ed.), *Poets on poetry* (pp. 250-272). New York: The Free Press. (Original work published 1844)

Ferrari, G. R. F. (Ed.). (2000). *Plato: The Republic* (T. Griffith, Trans.). Cambridge: Cambridge University Press.

Foss, C. (1989). Tools for reading and browsing hypertext. *Information Processing and Management, 25*(4), 407-418.

Frye, N. (1963). *The educated imagination.* Toronto: Canadian Broadcasting Corporation.

Gall, J. E., & Hannafin, M. J. (1994). A framework for the study of hypertext. *Instructional Science, 22*(3), 207-232.

Giroux, H. A. (1995). Animating youth: The Disneyfication of children's culture. *Socialist Review, 24*(3), 23-55.

Goodman, L. (1995). *As You Like It.* CD-Rom Pilot. [Computer software]. Milton Keynes: The Open University/British Broadcasting Corporation.

Graff, H.J. (1987). *The legacies of literacy: Continuities and contradictions in Western culture and society.* Indianapolis: Indiana University Press.

Gray, S. H. & Sasha, D. (1989). To link or not to link? Empirical guidance for the design of nonlinear text systems. *Behavior Research Methods, Instruments, & Computers, 21*(2), 326-333.

Gray, T. (1748/1983). Ode on the death of a favorite cat, drowned in a tub of goldfishes. In A. W. Allison et al. (Eds.), *The Norton Anthology of Poetry* (3rd ed.) (p. 247). New York: W.W. Norton & Company. (Original work published 1748)

Gibson, S. & Oberg, D. (1997). Case studies of Internet use in Alberta schools: Emerging issues. *Canadian Journal of Educational Communication, 26*(3), 145-164.

Gibson, S. & Oberg, D. (1998). Learning to use the Internet: A study of teacher learning through collaborative research partnerships. *Alberta Journal of Educational Research, 44*(2), 239-241.

Goetz, E. T., & Sadoski, M. (1996). Imaginative processes in literary comprehension: Bringing the text to life. In R. J. Kreuz & M. S. MacNealy (Eds.), *Empirical approaches to literature and aesthetics* (pp. 221-240). Norwood, NJ: Ablex.

Hacker, D. (1996). *Canadian writer's reference* (2nd ed.). Toronto: Nelson Canada.

Halio, M. P. (1990). Student writing: Can the machine maim the message? *Academic Computing, 4*, 16-19, 45.

Hansson, G. (1992). Readers responding—and then? *Research in the Teaching of English, 26*(2), 135-148.

Hardy, T. (1980). *Tess of the Durvervilles*. New York: Signet Classics. (Original work published 1891)

Harpold, T. (1994). Conclusions. In G. Landow (Ed.), *Hyper / Text / Theory* (pp. 189-222). Baltimore: John Hopkins University Press.

Heim, M. (1987). *Electric language: A philosophical study of word processing*. New Haven: Yale University Press.

Hodgins, J. (1993). *A passion for narrative: A guide for writing fiction.* Toronto: McClelland & Stewart Inc.

Holman, C. H. (1978). *A handbook to literature* (3rd ed.). Indianapolis, IN: The Odyssey Press. (Original work published 1936)

Holt, P. O., & Howell, G. (1992). Making connections: The logical structuring of hypertext documents. *Instructional Science, 21*(1), 169-181.

Irving, W. (1869). Letter to Henry Brevoort. In P. M. Irving (Ed.), *The life and letters of Washington Irving* (pp. 64-65). New York: G. P. Putnam.

Iser, W. (1978). *The act of reading: A theory of aesthetic response.* Baltimore: The Johns Hopkins University Press.

Iser, W. (1980). The reading process: A phenomenological approach. In J.P. Tompkins (Ed.), *Reader-response criticism* (pp. 50-69). Baltimore: The Johns Hopkins University Press. (Original work published 1974)

Jackson, S. (1995). *Patchwork girl: A modern monster* [Computer software]. Watertown, MA: Eastgate Systems.

Jacobson, M. J., & Spiro, R. J. (1995). Hypertext learning environments, cognitive flexibility, and the transfer of complex knowledge: An empirical investigation. *Journal of Educational Computing Research, 12*(4), 301-333.

Johnson, S. (1962). *The history of Rasselas Prince of Abyssinia.* W. Fleischauer (Ed.). New York: Barron's. (Original work published 1759)

Johnson, S. (2001, February 15). Stories on a rail: What good is storytelling in an action game? *Feed Magazine*. Retrieved July 15, 2001 from http://www.feedmag.com/templates/videogame_article.php3?a_id=1619

Johnson-Eilola, J. (1993) Control and the cyborg: Writing and being written in hypertext. *Journal of Advanced Composition, 13*(2), 381-399.

Johnson-Eilola, J. (1994). Reading and writing in hypertext: Vertigo and euphoria. In C. L. Selfe & S. Hilligoss (Eds.), *Literacy and computers: The complications of teaching and learning with technology.* New York: Modern Language Association.

Joyce, M. (1987). *Afternoon, a story* [Computer software]. Cambridge, MA: Eastgate Systems.

Joyce, M. (1995). *Of two minds: Hypertext pedagogy and poetics.* Ann Arbor: The University of Michigan Press.

Joyce, M. (1997). Nonce upon some times: Rereading hypertext fiction. *Modern Fiction Studies, 43*(3), 579-597.

Kaplan, N., & Moulthrop, S. (1990). Other ways of seeing. *Computers and Composition, 7*(3), 89-102.

Katz, J. E. (1997). The social side of information networking. *Society, 34*(3), 9-12.

Katz, J. & Aspden, P. (1997). Motivations for and barriers to Internet usage: Results of a national public opinion survey. *Internet Research, 7*(3), 170-188.

Keep, C., McLaughlin, T., & Parmar, R. (1995). *The electronic labyrinth.* Retrieved July 15, 2001 from http://jefferson.village.virginia.edu/elab/elab.html.

Kendrick, M., & Dobson, T. (2001, July). *From pencils to pixels: Representing literacy.* Paper presented at the European Conference on Reading, Dublin, Ireland.

Kim, H., & Hirtle, S. C. (1995). Spatial metaphors and disorientation in hypertext browsing. *Behaviour & information technology, 14*(4), 239-250.

Kintsch, W. (1988). The role of knowledge in discourse comprehension: A construction integration model. *Psychological Review, 95*(2), 163-182.

Ludlow, P. (Ed.). (1996). *High noon on the electronic frontier: Conceptual issues in cyberspace.* Cambridge, MA: The MIT Press.

Landow, G. P. (1997). *Hypertext 2.0: The Convergence of Contemporary Critical Theory and Technology* (Revised ed.). Baltimore: Johns Hopkins University Press.

Lanham, R. (1993). *The electronic word: Democracy, technology, and the arts.* Chicago: The University of Chicago Press.

Larson, S. F., & Seilman, U. (1988). Personal remindings while reading literature. *Text, 8*(4), 411-429.

Laurence, M. (1974). *The Diviners.* Toronto: Bantam Books.

László, J. (1990). Images of social categories vs. images of literary and non-literary objects. *Poetics, 19*, 277-291.

Lefrancois, G. R. (1988). *Psychology for teaching* (Sixth ed.). Belmont, CA: Wadsworth Publishing Company.

Leventhal, L. M., Teasley, B. M., Instone, K., Rohlman, D. S., & Farhat, J. (1993). Sleuthing in HyperHolmes: an evaluation of using hypertext vs. a book to answer questions. *Behaviour and Information Technology, 12*, 149-164.

Levere, J. (2001, May 21). A campaign seeks out works by unknown writers and wants to publish them--digitally. *The New York Times,* p.

Lydgate, J. (1911). As a mydsomer rose. In H. N. MacCracken (Ed.), *The minor poems of John Lydgate* (2 Vols.; EETS ES 107, OS 192). London: Oxford University Press, for the Early English Text Society.

Malloy, J., & Marshall, C. (1996). *Forward/Anywhere* [Computer software]. Watertown, MA: Eastgate Systems.

Manguel, A. (1996). *A history of reading.* Toronto: A.A. Knopf Canada.

Marlow, C. (1986). *Doctor Faustus.* In M. H. Abrams (Ed.). *The Norton anthology of English literature* (5th ed.) (pp. 814-865). New York: W.W. Norton & Company (Original work published 1588)

Maslow, A. H. (1970). *Motivation and personality* (2nd ed.). New York: Harper & Row.

Maxwell, R. J. & Meiser, M. J. (1997). *Teaching English in middle and secondary schools* (2nd ed.). Upper Saddle River, NJ: Prentice-Hall Inc.

McDaid, J. (1994). Luddism, SF, and the aesthetics of electronic fiction. *The New York Review of Science Fiction, 69*(1), 8-11.

McHoul, A., & Roe, P. (1996). Hypertext and reading cognition. In B. Gorayska & J. L. Mey (Eds.), *Cognitive technology: In search of a human interface* (pp. 347-359). Amsterdam: Elsevier Science Publishing Co.

McLure, H. (2000). The wild, wild web: The mythic American west and the electronic frontier. *Western historical quarterly, 31*(4), 457-477.

Miall, D. S. (1993). Beyond the word: Reading and the computer. G.P. Landow & P. Delany (Eds.) *The digital word: Text-based computing in the humanities.* (pp. 319-342). Cambridge, MA: The MIT Press, 319-342.

Miall, D. S. (1999, November). The resistance of reading: Romantic hypertexts and pedagogy. *Romanticism On the Net, 16*. Retrieved July 15, 2001 from http://users.ox.ac.uk/~scat0385/reading.html

Miall, D. S., & Dobson, T. M. (in press). Reading hypertext and the experience of literature. *Journal of digital information.*

Miall, D. S., & Kuiken, D. (1994a). Beyond text theory: Understanding literary response. *Discourse processes, 17*, 337-352.

Miall, D. S., & Kuiken, D. (1994b) Foregrounding, defamiliarization, and affect: Response to literary stories. *Poetics, 22*, 389-407.

Miall, D. S., & Kuiken, D. (1995). Aspects of literary response: A new questionnaire. *Research in the teaching of English, 29*, 37-58.

Miall, D. S., & Kuiken, D. (1999). What is literariness? Three components of literary reading, *Discourse processes, 28*, 121-138.

Mohageg, M. F. (1992). The influence of hypertext linking structures on the efficacy of information retrieval. *Human Factors, 34*(3), 351-367.

Moulthrop, S. (1991) Reading from the map: Metonymy and metaphor in the fiction of *Forking Paths.* In P. Delany and G. P. Landow (Eds.), *Hypermedia and literary studies* (pp. 119-132). Cambridge, MA: The MIT Press.

Moulthrop, S. (1992). Informand and rhetoric: A hypertextual experiment. *Writing on the Edge*, *4*(1), 103-127.

Moulthrop, S. (1993). You say you want a revolution? Hypertext and the laws of media. In E. Amiran, & J. Unsworth (Eds.), *Essays in postmodern culture* (pp. 69-97). Oxford: Oxford University Press.

Moulthrop, S. (1994). They became what they beheld: The futility of resistance in the space of hypertext writing. In C. L. Selfe, & S. Hilligoss (Eds.), *Literacy and Computers: The Complications of Teaching and Learning with Technology* (pp. 220-237). New York: Modern Language Association.

Moulthrop, S. (1995/1997) *Hegirascope*. Retrieved July 15, 2001 from http://raven.ubalt.edu/staff/moulthrop/hypertexts/HGS/

Moulthrop, S. (1997). Pushing back: Living and writing in broken space. *Modern Fiction Studies, 43*(3), 651 - 674.

Nelson, T. H. (1991). As we will think. In J. M. Nyceand & P. Kahn (Eds.), *From memex to hypertext: Vannevar Bush and the mind's machine* (pp. 245-260). Boston: Academic Press.

Nelson, T. H. (1981). *Literary machines.* Swarthmore, PA: Author.

Nell, V. (1988). *Lost in a book: The psychology of reading for pleasure*. New Haven: Yale University Press.

Oberg, D., & Gibson, S. (1999). What's happening with Internet use in Alberta schools? *Alberta Journal of Educational Research, 45*(3), 239-252.

O'Faolain, S. (1980). *The trout.* In S. O'Faolain *Collected stories* (Vol. I) (pp. 383-386). London: Constable.

Perrine, L. (Ed.). (1987). *Story and structure* (Canadian edition). Toronto: Harcourt Brace & Company.

Platt, C. (1994). Why hypertext doesn't really work. *The New York Review of Science Fiction, 72*(1), 3-5.

Poe, E. A. (1985). The tell-tale heart. In *Edgar Allan Poe: Sixty-seven tales, one complete novel, The raven, and thirty other poems* (pp. 354-357). New York: Chatham River Press.

Postman, N. (1992). *Technopoly: The surrender of culture to technology.* New York: Vintage Books.

Postman, N. (Speaker). (2000). The blessing and curse of technology. In *Where do we go from here? The quest for narratives in a technological society* (Cassette Recording No. 2959A). Vancouver: Regent College.

Rabinowitz, P. J. (1987). *Before reading: Narrative conventions and the politics of interpretation.* Ithaca, NY: Cornell University Press.

Rogers, C. R. (1969). *Freedom to learn.* Columbus, OH: Charles E. Merrill.

Rosenblatt, L. (1968). *Literature as exploration.* New York: Noble and Noble, Inc.

Rouet, J. F. & Levonen, J. J. (1996). Studying and learning with hypertext: Empirical studies and their implications. In J. F. Rouet, J. J. Levonen, A. Dillon, & R. J. Spiro (Eds.), *Hypertext and cognition* (pp. 9-23). Mahwah, NJ: Lawrence Erlbaum.

The Ruin. (1987). In M. Alexander (Ed.), *The earliest English poems* (p. 28). Harmondsworth: Penguin Books Ltd.

Sandauer, T. K, Dumais, S. T., Gomez, L. M., & Furnas, G. W. (1982). Human factors in data access. *Bell System Technical Journal, 61*, 2487-2509.

Schwartz, L. S. (1997). *Ruined by reading: A life in books.* Boston, MA: Beacon Press.

Shelley, P. B. (1986). A defence of poetry. In M. H. Abrams et al. (Eds.), *The Norton anthology of English literature* (5th ed.) (pp. 778-792). New York: W. W. Norton & Company. (Original work published 1840)

Shakespeare, W. (1974). *The Merchant of Venice*. In G. B. Evans (Ed.), *The Riverside Shakespeare* (pp. 254-283). (Original work published 1600)

Sidney, P. (1962). An apology for poetry. In C. Norman (Ed.), *Poets on poetry* (pp. 21-68). New York: The Free Press. (Original work published 1595)

Siegel, W.A. and White, S.H. (1975). The development of spatial representations of large-scale environments. In H. W. Reese (Ed.), *Advances in child development and behavior, 10*, 9-52.

Simpson, A., & McKnight, C. (1990). Navigation in hypertext: Structural cues and mental maps. In R. McAleese, & C. Green (Eds.), *Hypertext: The state of the art* (pp. 74-83). Oxford, England: Intellect Books Ltd.

Slatin, J. (1990). Reading hypertext: Order and coherence in a new medium. In P. Delany & G. P. Landow (Eds.), *Hypermedia and literary studies* (pp. 153-170). Cambridge, MA: The MIT Press.

Snyder, I. (1996). *Hypertext: The electronic labyrinth.* New York: New York University Press.

Speer, T. (1995). Re-conceiving the five-paragraph essay in an era of uncertainty. *Teaching English in the two year college, 22*(1), 21-29.

Spiro, R.J., Coulson, R.L., Feltovich, P.J. and Anderson, D.K. (1994). Cognitive flexibility theory: Advanced knowledge acquisition in ill-structured domains. In , R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.), *Theoretical models and processes of reading* (4th ed.). Newark, DE: International Reading Association.

Statistics Canada. (1999). Average hours per week of television viewing [Data file]. Available from Statistics Canada Web site, http://www.statcan.ca/english/Pgdb/People/Culture/arts23.htm

Statistics Canada. (2001a). Profile of book publishing and exclusive agents, English language firms. Retrieved June 5, 2001 from http://www.statcan.ca/english/Pgdb/People/Culture/arts02.htm

Statistics Canada. (2001b). Characteristics of teachers in public elementary and secondary schools [Data file]. Available from Statistics Canada Web site, http://www.statcan.ca/english/IPS/Data/81C0001.htm

Sterne, L. (1986) *The life and opinions of Tristram Shandy*. Harmondsworth: Penguin Books Ltd. (Original work published 1767)

Stoll, C. (1995). *Silicon snake oil: Second thoughts on the information highway*. New York: Doubleday.

Sunshine, P. M. & DiVesta, F. J. (1976). Effects of density and format on letter discrimination by beginning readers with different learning styles. *Journal of educational Psychology, 68*, 15-19.

Taylor, C., & Self, J. (1990). Monitoring hypertext users. *Interacting With Computers, 2* (3), 297-312.

Tolkien, J. R. R. (1954). *The lord of the rings*. London: G. Allen & Unwin.

United States Copyright Office. (2001). *Copyright law of the United States of America and related laws contained in Title 17 of the United States code* (Circular 92). Available from U. S. Copyright Office, Library of Congress, http://www.loc.gov:8081/copyright/title17/circ92.html

Unland, K. (2001, June 21) Victoria School wins $60M to rebuild 'Canada's Julliard.' *The Edmonton Journal*, E1.

Watt, R. J. C. (1999). *Concordance 1.1.3.105* [Computer software]. Dundee: Author.

Willinsky, J. (1999). *Technologies of Knowing: A Proposal for the Human Sciences*. Boston, MA: Beacon Press.

Witkin, H. A. (1969). Social influences in the development of cognitive style. In D. A. Goslin (Ed.), *Handbook of socialization theory and research* (pp. 687-706). Chicago: Rand McNally.

Witkin, H. A., Moore, C. A., Goodenough, D. R., & Cox, P. W. (1977). Field-dependent and field-independent cognitive styles and their educational implications. *Review of Educational Research, 47*, 1-64.

Woolf, V. (1986). Modern fiction. In M. H. Abrams et al. (Eds.), *The Norton anthology of English literature* (5th ed.) (pp. , 1993-1999). New York: W.W. Norton & Company. (Original work published 1925)

Young, J. (1997, October 3). Canadian university promises it won't require professors to use technology. *The Chronicle of Higher Education*, A28.

Van Peer, W. (1994). The empirical study of literary texts. In G. Rusch (Ed.), *Empirical approaches to literature: Proceeding of the fourth biannual conference of the International Society for the Empirical Study of Literature.* Siegen: LUMIS-Publications.

Zwaan, R. A., Magliano, J., & Gaesser, A. C. (1995). Dimensions of situation model construction in narrative comprehension. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 21*(2), 386-397.

Zwaan, R. A., & Radvansky, G. A. (1998). Situation models in language and memory. *Psychological Bulletin, 123*, 162-185.

Appendices

Appendix A: Study I Reading and computer usage questionnaire

RCUQ **I.D. Number**_____

Section I: General

1. Year of university_____ 2. Major/minor_____ (if declared)

3. M / F (circle one) 4. Age_____

5. Please indicate on which of the following activities you spend the most leisure time (rank each activity so that 1 = "more time than the other activities," 8 = "less time than the other activities," etc).

Watching movies (on video or in the theatre) _____

Playing an instrument _____

Using a computer for recreation (e.g. games) _____

Reading _____

Watching television _____

Participating in sports (for recreation or exercise) _____

Listening to music _____

—please specify type (ie. "jazz") _____

Other_____ _____

Section II: Current Reading

1. How many literary texts have you read in the past year for your own pleasure? (Circle the letter of your answer.)

a.	None	d.	5 to 7
b.	1 or 2	e.	7 to 10
c.	3 to 5	f.	more than 10

If you circled "a" (none), skip to question 3.

2. Write down the titles and/or authors of up to five works you have read in the last year (not including those required in any courses you have taken):

a.	Author:	Title:
b.	Author:	Title:
c.	Author:	Title:
d.	Author:	Title:
e.	Author:	Title:

3. Name three authors whose writing you particularly enjoy (including, if you wish, any required in courses you have taken); write down one or more titles of works by each author that you have read.

a.	Author:	Title(s):
b.	Author:	Title(s):
c.	Author:	Title(s):

4. Please indicate which of the following genres you prefer to read. (Rank each genre so that 1 = "most preferable" and 10 = "less preferable," etc.)

Romances	_____
Fantasy or science fiction	_____
Classical novels	_____
Historical novels	_____
Mystery	_____
Poetry	_____
Newspapers	_____
Magazines	_____
Biography	_____
Other (specify)_____	_____

5. How often do you re-read a novel that has interested you? (Circle the letter which best represents your answer.)

a. never b. rarely c. occasionally d. often e. almost always

6. Is there a book, such as a novel or biography, that you are hoping to read soon? If so, please write the name of the author and/or title below:

Author: Title:

Section III: Computer usage

1. How much time do you spend using a computer on a daily basis? (Circle the letter which is closest to your answer.)

a.	None	d.	2 – 4 hours
b.	less than 1 hr	e.	4 – 6 hours
c.	1 – 2 hrs	f.	more than 6 hours (estimate: ____ hrs)

Please use the space below to comment if you feel no answer listed above adequately represents your computer usage (ie. if you use a computer once a week). If you circled "a" (none), you may wish to skip to question 5.

2. Please indicate on which of the following computer activities you spend the most time (rank each activity so that 1 = "more time than the other activities," 11 = "less time than the other activities," etc).

Computer games _____

Creating/editing graphics _____

Exploring the Internet _____

Using MUDs and MOOs _____

Researching using CD-Roms _____

Word processing _____

News groups _____

Using electronic mail _____

Working with spread sheets or data bases _____

Creating/maintaining a web page (or pages) _____

Other (specify) _____ _____

3. Write down the names of up to five software packages you most commonly use. List them in order of usage (in other words, if you use a particular word processing package most frequently, list it beside 1, and so on):

1._____

2._____

3._____

4._____

5._____

4. How much time do you spend reading documents on computer screen per day? (Circle the letter which best represents your answer.)

a.	None	d.	3 – 4 hours
b.	less than 1 hr	e.	4 – 5 hours
c.	1 – 2 hours	f.	more than 5 hours (estimate: _____hrs)

5. List up to three types of documents that you are most likely to read on-line (e.g. essays, on-line magazines, news, travel information):

1._____

2._____

3._____

6. List the names of up to three web sites you commonly visit. (If you do not use the Internet, please indicate this on the first line below.)

1._____

2._____

3._____

7. How would you rate your own computer knowledge (check one)?

a.	no experience	_____	d.	advanced	_____
b.	limited	_____	e.	expert	_____
c.	moderate	_____			

This is the end of this questionnaire;
please inform the researcher that you are ready to begin the next phase.
Thank you for your time!

Appendix B: Study I pre-reading briefing, and pre- and post-reading instructions

Study I Pre-reading briefing

This study will take approximately one and ¼ to one and ¾ hours to complete. You will be asked to complete the following tasks: i. to fill out two questionnaires about your reading preferences and about how much time you spend reading on computer; ii. to read a text on computer and to note passages you find striking or evocative as you do so; iii. to comment aloud on your experience of reading the text using a provided tape recorder.

As a participant you should know that the information you provide in this study will remain anonymous. You will be given a code number so that we can coordinate the information you provide. Neither your name nor any other identifying information will be associated with your responses. All the information you provide will be stored in a secure area. Also, the information you provide will be confidential. We will use it for research purposes only, and any description of this information made available to other researchers will be in the form of statements about people in general, rather than about individuals. Finally, you may choose to not answer some of the questions that we ask, you may choose to discontinue your participation in this study at any time, and you may even decide later to withdraw permission for us to use the information that you provide without loss of payment. Of course, we hope that you will freely share your responses.

If you are willing to participate, please confirm that for our records by reading and then signing the consent form in front of you.

At this time, I would also ask you to choose an ID number from the list which I will now pass around. Sign your name beside that number, and then write the number you have chosen on the front of your participant envelope in the space provided. When you have finished these tasks, please pass the consent forms and the ID list to me.

Now we are ready to begin. As I mentioned, in this session you will be asked to complete three tasks: i. to fill out two questionnaires about how you experience reading; ii. to read a text on computer screen and to note passages you find striking or evocative as you do so; iii. to comment aloud on your experience of reading the text using a provided tape recorder. Are there any questions at this point?

Appendix B continued

Study I Reading Instructions: Simulation

Please read all of this page carefully *before* beginning.

The story you are about to read is a networked hypertext. In order to progress through this story, you must make choices between the links that appear on each screen. Once you progress from one screen to another, you will be unable to return to the screen you have just left; therefore, be sure to read *all* of the text on the displayed page, and to make any notes, *before* choosing a link. There are no "default" links, so do not use the return button in an attempt to progress to the next page.

Noting your response to the text

We would like you to read this story *as naturally as possible*; in other words, try as nearly as you are able to attend to the text as though you were reading it for pleasure. When, or if, a passage strikes you as being particularly striking or evocative, make a note of the page on the "Response Sheet" by jotting down the first two or three words of the paragraph, then write down one, or perhaps two, words which will serve to remind you of where the passage is located on the page and why you find that passage striking or evocative.

Example:

> If I were reading a paragraph beginning "One dark and stormy night," and if I found the second line of that paragraph striking because it describes, for example, "dancing spiders," I might note this as follows: "'One dark,' line 2, dancing."

Your notes are purely to help you recall passages which you find striking, and therefore you should make them in a manner which is most meaningful and helpful to you; however, it is also important that you keep them very brief.

When you have finished the story, *leave the screen as it is* and contact the researcher.

Before you begin reading, be sure to write your ID number, which you have recorded on your participant envelope in the space provided on your "Response Sheet."

Appendix B continued

Study I Post-reading instructions: Simulation

Please be sure that you have read "The Demon Lover" before you follow these instructions.

First, look at the response sheet you have completed. As you do so, reflect on the story and make a circle around the numbers of the passages which you recall to be the six *most striking* of those you have noted. (If there are more than six which are particularly striking, and you are having difficulty in limiting your choice, you may choose as many as eight passages. If you have noted less than six passages, simply follow the instructions below for however many passages you do have.)

When you have finished this task, I would like you to begin by recording any general comments you may have about your experience of reading "The Demon Lover." If possible, pay particular attention to the format of the text. Next, I would like you to review the story. You have been provided with an "output report" which specifies which links you followed to aid you in re-reading the story. When you come to the first of the six passages you have identified as particularly striking or evocative, do three things:

i. Using the tape-recorder provided, record aloud the page "name" (the first two words of the paragraph) and your key words;
ii. Read the phrase from the story aloud into the tape recorder;
iii. In as much detail as possible, describe your experience of that phrase. Describe aloud any thoughts, feelings, images, or memories that were part of your experience of that phrase.

When you have finished making comments about the first passage, move on to the next passage you have identified and follow the same procedure for all of those responses you have circled. Please be sure to progress through the story choosing only those links you chose in the first reading.

When you begin recording your responses, please be sure to first state the identification number which you have written on the front of your participant envelope. If you have any questions, ask the researcher now.

To review—

Press record.
State your participant number.
Comment generally on your experience of reading the text.
Comment on each of the passages you found striking or evocative.
Notify the researcher that you have finished.

Appendix B continued

Study I Reading instructions: Linear

Please read all of this page carefully *before* beginning.

We would like you to read this story as naturally as possible; in other words, try as nearly as you are able to attend to the text as though you were reading it for pleasure. When, or if, a passage strikes you as being particularly striking or evocative, make a note of the name of the page on the "Response Sheet" by jotting down the first two or three words of the paragraph, then write down one, or perhaps two, words which will serve to remind you of where the passage is located on the page and why you find that passage striking or evocative.

> Example:
>
> If I were reading a paragraph beginning "One dark and stormy night," and if I found the second line of that paragraph striking because it describes, for example, "dancing spiders," I might note this as follows: "'One dark,' line 2, dancing."

Your notes are purely to help you recall passages which you find striking, and therefore you should make them in a manner which is most meaningful and helpful to you; however, it is also important that you keep them very brief.

When you have finished the story, leave the screen as it is and contact the researcher.

Before you begin, be sure to write your ID number, which you have recorded on your participant envelope, in the space provided on your "Response Sheet."

Appendix B continued

Study I Post-reading instructions: Linear

Please make sure that you have read "The Demon Lover" before you follow these instructions.

First, look at the response sheet you have completed. As you do so, reflect on the story and make a circle around the numbers of the passages which you recall to be the six *most striking* of those you have noted. (If there are more than six which are particularly striking, and you are having difficulty in limiting your choice, you may choose as many as eight passages. If you have noted less than six passages, simply follow the instructions below for however many passages you do have.)

When you have finished this task, I would like you to begin by recording any general comments you may have about your experience of reading "The Demon Lover." Next, I would like you to review the story. When you come to the first of the six passages you have identified as particularly striking or evocative, do three things:

i. Using the tape-recorder provided, record aloud the page "name" (the first two or three words of the paragraph) and your key words;
ii. Read the phrase from the story aloud;
iii. In as much detail as possible, describe your experience of that phrase. Describe aloud any thoughts, feelings, images, or memories that were part of your experience of that phrase.

When you have finished making comments about the first passage, move on to the next passage you have noted and follow the same procedure for all of those responses you have circled.

When you begin recording your responses, please be sure to first state the identification number which you have written on the front of your participant envelope. If you have any questions, please ask the researcher now.

To review—

Press record.
State your participant number.
Comment generally on your experience of reading the text.
Comment on each of the passages you found striking or evocative.
Notify the researcher that you have finished.

Appendix C: Study II Reading and computer usage questionnaire

Literary Reading and Computer Usage Questionnaire **I.D. Number**_____

Section I: General

1. Year of university_____ 2. Major/minor_____ (if declared)

4. M / F (circle one) 4. Birth date (year only) _____

5. Please circle the number below the description that best represents how much time you spend on the following leisure activities.

	never	rarely	sometimes	often	daily
Watching movies (on video or in the theatre)	1	2	3	4	5
Playing an instrument	1	2	3	4	5
Using a computer for recreation (e.g. games)	1	2	3	4	5
Reading	1	2	3	4	5
Watching television	1	2	3	4	5
Participating in sports (for recreation or exercise)	1	2	3	4	5
Listening to music	1	2	3	4	5
Other_____	1	2	3	4	5

Section II: Current Reading

7. How many literary texts have you read in the past year *for your own pleasure*? (Circle the letter of your answer.)

d. None
e. 1 or 2
f. 3 to 5
d. 5 to 7
e. 7 to 10
f. more than 10

8. Write down the titles and/or authors of up to five *literary* texts you have read in the last year (specify whether the book was read for pleasure or for a course):

a. Author: Title:

f. Author: Title:

g. Author: Title:

h. Author: Title:

i. Author: Title:

9. Please indicate which of the following genres you read by rating each so that 1 = "never" and 4 = "often."

	never	rarely	sometimes	often
Romances	1	2	3	4
Fantasy or science fiction	1	2	3	4
Classical novels	1	2	3	4
Historical novels	1	2	3	4
Mystery	1	2	3	4
Poetry	1	2	3	4
Newspapers	1	2	3	4
Magazines	1	2	3	4
Biography	1	2	3	4
Other (specify)_____	1	2	3	4

10. How often do you re-read a novel that has interested you? (Circle the letter that best represents your answer.)

a. never b. rarely c. sometimes d. often e. almost always

Section III: Computer usage

8. How much time do you spend using a computer on a daily basis? (Circle the letter that is closest to your answer.)

d.	None	d.	2 – 4 hours
e.	less than 1 hr	e.	4 – 6 hours
f.	1 – 2 hrs	f.	more than 6 hours (estimate: ____ hrs)

Please use the space below to comment if you feel no answer listed above adequately represents your computer usage (ie. if you use a computer once a week). If you circled "a" (none), you may wish to skip to question 5.

9. Please indicate on which of the following computer activities you spend the most time by rating each activity so that 1 = "never" and 5 = "daily."

	never	rarely	sometimes	often	daily
Computer games	1	2	3	4	5
Creating/editing graphics	1	2	3	4	5
Exploring the Internet	1	2	3	4	5
Using MUDs and MOOs	1	2	3	4	5
Researching using CD-Roms	1	2	3	4	5
Word processing	1	2	3	4	5
News groups	1	2	3	4	5
Using electronic mail	1	2	3	4	5
Working with spread sheets or data bases	1	2	3	4	5
Creating/maintaining a web page (or pages)	1	2	3	4	5
Other (specify) _____	1	2	3	4	5

10. Write down the names of up to three software packages (ie. word processing or email programmes, databases, etc) you most commonly use. List them in order of frequency of use.

1._____

2._____

3._____

11. How much time do you spend reading documents on computer screen per day? (Circle the letter that best represents your answer.)

a.	None	d.	3 – 4 hours
b.	less than 1 hr	e.	4 – 5 hours
c.	1 – 2 hours	f.	more than 5 hours (estimate: _____hrs)

12. List up to three types of documents that you are most likely to read on-line (e.g. essays, on-line magazines, news, travel information):

1._____

2._____

3._____

13. How would you rate your own computer knowledge (check one)?

d.	no experience	_____	d.	advanced	_____
e.	limited	_____	e.	expert	_____
f.	moderate	_____			

This is the end of the Literary Reading and Computer Usage Questionnaire; please notify the researcher that you have finished. Thank you for your time!

Appendix D: Study II pre-reading briefing and post-reading instructions

Study II Pre-reading briefing

This study will take approximately one hour to complete. You will be asked to complete the following tasks: i. to fill out two questionnaires about your reading preferences and about how much time you spend reading on computer; ii. to read a text on computer; iii. to comment aloud on your experience of reading the text using a provided tape recorder.

As a participant you should know that the information you provide in this study will remain anonymous. You will be given a code number so that we can coordinate the information you provide. Neither your name nor any other identifying information will be associated with your responses. All the information you provide will be stored in a secure area. Also, the information you provide will be confidential. We will use it for research purposes only, and any description of this information made available to other researchers will be in the form of statements about people in general, rather than about individuals. Finally, you may choose to not answer some of the questions that we ask, you may choose to discontinue your participation in this study at any time, and you may even decide later to withdraw permission for us to use the information that you provide without loss of credit. Of course, we hope that you will freely share your responses.

If you are willing to participate, please confirm that for our records by reading and then signing the consent form in front of you.

At this time, I would also ask you to choose an ID number from the list that I will now pass around. Sign your name beside that number, and then write the number you have chosen on the front of your participant envelope in the space provided. When you have finished these tasks, please pass the consent forms and the ID list to me.

Now we are ready to begin. As I mentioned, in this session you will be asked to complete three tasks: i. to fill out two questionnaires about how you experience reading; ii. to read a text on computer screen and to note passages you find striking or evocative as you do so; iii. to comment aloud on your experience of reading the text using a provided tape recorder. Are there any questions at this point?

Appendix D continued

Study II Linear instructions for self-recording comments

Recording your comments

In as much detail as you can, please speak about your reading experience into the tape recorder. This experiential detail is a very important data source for this study, so please spend sufficient time responding carefully to this request.

(Please state your participant number before you make any comments.)

- First, review the reading experience you have just had in your mind.

- While reading, when did something strike you as evocative or meaningful? (In responding to this question, you might think of one or more moments when perhaps you slowed down, paused, had another thought come to mind, felt emotionally touched, and so on.)

    - What specifically struck you about the moment(s) you have identified?
    - What were you reminded of?
    - How or what did you feel?
    - Is there anything else that might distinguish this moment?

- Now focus on your experience of reading this text on computer.

    - How would you compare this reading experience to others you have had?
    - During reading, what physical or spatial sense did you have of your person or of the text?
    - What mood or feeling was evoked as a result of moving through the text by activating links? Can you point to a specific example?

- Finally, reflect on anything else that might be worth observing about your reading experience.

Thank you very much for your comments.
Please continue to the final phase of the study.

Appendix D continued

Study II Simulation instructions for self-recording comments

Recording your comments

In as much detail as you can, please speak about your reading experience into the tape recorder. This experiential detail is a very important data source for this study, so please spend sufficient time responding carefully to this request.

(Please state your participant number before you make any comments.)

- First, review the reading experience you have just had in your mind.

- While reading, when did something strike you as evocative or meaningful? (In responding to this question, you might think of one or more moments when perhaps you slowed down, paused, had another thought come to mind, felt emotionally touched, and so on.)
  - What specifically struck you about the moment(s) you have identified?
  - What were you reminded of?
  - How or what did you feel?
  - Is there anything else that might distinguish this moment?

- Now focus on your experience of reading this text on computer.
  - How would you compare this reading experience to others you have had?
  - During reading, what physical or spatial sense did you have of your person or of the text?
  - What was it like to choose between links?
  - In specific instances, what prompted you to make the choices you did?
  - What mood or feeling was evoked as a result of moving through the text by activating links? Can you point to a specific example?

- Finally, reflect on anything else that might be worth observing about your reading experience.

Thank you very much for your comments.
Please continue to the final phase of the study.

Appendix E: Study II Constituent Categories

This appendix shows all codes embedded in "The Trout" transcript material as well as statements describing each feature and reader comments exemplifying how the feature appeared in the transcripts.

Category 1:	**Interpretive and observational**
<interp-language>	Interpretation of the text involving statements about language.
	[R S325] Something that did strike me is that they talked about her lovely long legs, and stuff like that, and she's not that old, and I felt that maybe that was a little, like, provocative, or something.
<interp-thematic>	Interpretation of the text involving statements about theme.
	[R S302] It seems to be a story about, she's 12 years old, and her, it's, it's almost, she's almost at a point where she feels she's too old for her brother, and too, her parents don't understand her. Like, when she, they were talking about the fairy godmother stories, and she knew she was too old for that kind of maybe like a coming of age story, I don't know.
<interp-symbolic>	Interpretation of the text involving statements about symbolism.
	[R L305] I think that the, the girl and the fish together are somewhat of a symbol of each other. Perhaps the girl feels that she's a little bit out on her own just like the single fish is.
<interp-general>	Interpretation of the text (non-specific).
	[R L308] When she took the trout to the stream and let, set it free, and I thought it was kind of funny that she went back to bed and heard the, the sound of the reeling of fishing, of fishing reels, and, and I thought that was funny 'cause maybe that fish would have gotten caught but, after she had freed it. Anyways, I thought that was ironic.
<question>	Deliberates over particulars of the narrative.
	[R L328] [The story] kind of got me thinking about how, well, I guess like how, how I learned these things in biology class. How actual eggs, and you know, smaller organisms, how they actually move around, and how they move from different places. And I was just trying to think of how—think of a feasible explanation for how that trout actually got there.

<allusion>	Allusion to another text. (Note: Allusions to the children's series, *Choose Your Own Adventure*, which were made by way of describing the experience of choosing between links are categorised under a separate tag, <CYOA>). [RS319] And this reminded me of, of fairy tales that I might have heard where—like the "Lion and the Mouse" with the lion with its, the thorn in its foot who needs to be helped out.
<characteremotion>	Observation of character emotion. [R S325] And I saw her as, like, a little girl going out into the forest; and she was so scared, but part of the story made her seem like she was a lot older than she was.
Category 2:	**Response to style**
<foregrounding>	Repeats or alludes to foregrounded phrases during commentary (often, but not always, co-occurs with <defamiliar>).
& <defamiliar>	Defamiliarisation promoted by foregrounding (often, but not always, co-occurs with <foregrounding>). [R S327] The other thing, besides memories, which happened a lot were sort of new thoughts, new ways of putting things that the author would bring—certain phrases that would put a new tilt on things. It would be a different way of describing it, or explaining it, that would make me think more about the object, or the concept, than I would normally bother doing because I have a, sort of, common comprehension of it. Like the moon, she calls, she mentions at one point, full of little scraps of moon. And normally there's either one big whole moon, or you get to see a sliver of it. There, there's not more than one scrap. The separation of something so big and so powerful that nobody can really start breaking up. It makes you wonder how much power we put onto it just in our heads because it seems unattainable. And yet, something like that could be broken up. It just hopefully won't be, if that makes any sense.
<diction>	Remarks on diction. [RS306] It seemed like they were trying to use big words, but didn't use them properly, grammatical errors.

<dialect>	Remarks on representation of dialect.
	[RL302] Another thing that struck me was some of the grammatical structure sort of came at me a little bit side ways. I wasn't exactly sure if maybe it was supposed to be misspelled, or, or—things like baby, b-a-b-b-y. It was often in, when people were speaking, and so I'm thinking perhaps that was a dialect thing.
Category 3	**Imagery and visualization**
<imagery>	Remarks on vivid imagery (often accompanied by visualization, as in the following instance).
	[RL311] The best imagery, though, was the description of the night, and the moonlit path. I could really picture it.
<visual>	Visualization of setting, characters, etc (generally promoted by imagery).
	[RL311] The best imagery, though, was the description of the night, and the moonlit path. I could really picture it.
Category 4:	**Self of reader**
Subset A	*Self of reader reinforced*
<identification+>	Identification with character(s) (i.e., the reader shares an issue with the character).
	[R L304] The thing that struck me the most was the trout, and it just reminded me of myself. When they talked about the trout being stuck in one position, and not being willing to eat. It reminded me of myself when I went through a bout of depression. I, just not, just feeling stuck, and no matter if people tried to change your surroundings, you just, just were stuck.
<autobio-specific>	Relates specific autobiographical experience.
	[R S335] I remember the first time I went down in the ocean, and I saw for miles and miles all the fish, and all the wonders of the sea underneath the water, and I felt that I could do anything.

<dialect>	Remarks on representation of dialect. [RL302] Another thing that struck me was some of the grammatical structure sort of came at me a little bit side ways. I wasn't exactly sure if maybe it was supposed to be misspelled, or, or—things like baby, b-a-b-b-y. It was often in, when people were speaking, and so I'm thinking perhaps that was a dialect thing.
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<autobio-specific>	Relates specific autobiographical experience. [R S335] I remember the first time I went down in the ocean, and I saw for miles and miles all the fish, and all the wonders of the sea underneath the water, and I felt that I could do anything.

<autobio-general>	Relates general autcbiographical experience. [R L310] I used to live in the States. I used to live in Virginia, and the description of the dark walk just reminded me of a place that I used to go. I used to sneak out of the house at night, and I used to go to this place that sounded very familiar to the dark walk.
<involvement+>	Personal involvement in the story. [R L304] The reading was really, the reading was really good in the sense that you felt like the girl was talking to you and telling you her story. It wasn't like some of the pieces of literature that you read in English where you're bored to death. It moved along quickly, and you were, the speaker made you feel her emotions.
<readeremotion>	Expression of feeling(s) promoted by the text. [R L307] And I, I felt sorry, sorry, or sympathy, for the trout being in the well, and, and when the girl rescued the trout and, and brought him to the river, I was, I guess happy that, you know, now the trout's free. He's not confined in one place.
<enactment>	Pictures self experiencing (enacting) story events. [RS304] When she found the fish, the trout, I was really surprised, and, you know, I can, was sharing her emotion with her. I, you know, it really reminded me that I was there, that I kind of felt like I was just, you know, kind of going along her journey through the dark walk with her.
Subset B	*Self of reader repressed*
<identification->	Lack of identification with the character's situation. [RL315] I couldn't really identify with, like, walking in the woods because I'm not really an outside person, and I don't really like going, you know, into, like, the forest, or through the woods, or through a tunnel, or through an adventure.
<involvement->	Expresses detachment from the story (lack of personal involvement). [R S306] i felt kind of disinterested. It wasn't really my kind of reading.

Category 5	**Body**
<reader-static>	Reader imagines self as stationary during reading.
	[R S307] When I was reading, it was like I was seeing, looking on from the outside of the girl in the story, and watching her actions.
<reader-dynamic>	Reader imagines self as moving during reading.
	[R S304] I was more a part of the, the story. Like I felt like I was proceeding in this story with her, almost like I was just her companion, accompanying her.
<dream>	Reader experiences text as being like a dream.
	[R L306] This whole story reminded me of, of, like, a dream.
Category 6	**Story**
Subset A	*Structure, difficulties with*
<confuse>	Confusion regarding the sequence of events.
	[R L306] The story I just read did not mean a whole bunch to me. It was very confusing at, at points.
<confuse+>	Extensive confusion regarding the sequence of events.
	[R S314] When moving through the text by activating links, I was a little bit confused. I felt as thought they didn't completely make sense, different paragraphs with each other. It was difficult to follow the story. I felt like I had, I was reading a book with pages ripped out . . .
<loss>	Senses that some of the text is missing (or has been missed).
	[R S325] I didn't like how the, you got to move through the whole story by activating the links because, like as I said before, I felt like I was missing part of the story, since it did seem kind of choppy.
<storyflow->	Remarks that the story does not flow well.
	[R S323] Since there were different links, I was kind of confused 'cause the story seemed kind of choppy, kind of incoherent, like, as in it would jump from one topic to another topic about her and her brother fighting, and with the fish disappearing.

Subset B	*Structure, does not experience difficulties with*
<storyflow+>	Remarks that the story flows well.
	[R S304] It [the story] just kind of progressed really nicely, not at all, like it—well, it was just really continuous, and it just seemed to represent to what was happening really well.
Subset C	*Narrative, approves of*
<story+>	Approves of the story.
	[R L319] I think this story, "The Trout," was really good.
<closure+>	Arrives at a sense of closure.
	[R L304] At parts I was brought back into that feeling—like I understood the feeling of closure.
Subset D	*Narrative, disapproves of*
<story->	Disapproves of the story.
	[R L326] I really didn't feel anything for the text. Nor the characters. It just seemed very simple, very basic reading, quite dry.
<closure->	Does not arrive at a sense of closure.
	[R S327] I mean, it made sense as it was, but it's sort of like a book where you get to the end and you want a sequel just to hear about the other characters that were sort of mentioned but never really explored. Except in this case it was like the sequel was written, but the only place you could get it is some library half way across the continent. So it's unavailable there, and if you could only get to it, it might satisfy some curiosity.
Subset E	*Story, other*
<storyq>	Questions the elements of story. (i.e., The reader remarks on whether the story is "normal," "appropriate," "proper," and so on, suggesting that the text brings into question our notions of what constitutes "story.")
	[R S301] I don't know, maybe it's just 'cause I just, I chose, I don't know, not a series of links that would have been, I don't know, *appropriate*.

<suspense>	Remarks on heightened feelings of curiosity/suspense/anxiety, and so on.
	[R S301] There have been many times when it's just, when you have that feeling, you just get the, I don't know, emotions of excitement, and jittery, jittery and not knowing what's going to happen next, and feeling excited.
<plotsummary>	Summary of the plot.
	[RL321] The story that I just read, and well the little girl I believe on summer vacation with her family, and she'd always, she'd come to this summer vacation spot many times, I believe, 'cause she knew about the dark walk, the dark pathway that she's traveled down many times before, I believe. And what's interesting about this adventure this time around for her coming to this place again was that she was told of a well on this dark path where she had never seen before. And in this well she surprisingly found a trout.
Category 7	**Reader pace**
<readerpace+>	Text promoted increased reading pace.
	[R L315] I didn't find it really hard to read, but I just found that when it's on the, when it's on the computer, I just tend to, like, scan it and then click on the next, the next sheet.
<readerpace>	Neutral comment on reading pace.
	[R L301] I found that at the beginning of the story I didn't read quite as fast than closer to the end probably because it was mostly descriptive images, and not much related to characters or people.
Category 8	**Links**
Subset A	*Links, positive statements about*
<links+>	Enjoyed the process of choosing between links.
	[R S304] The only thing that I really liked is being able to control the hypertext. Like I could choose the link that I was going to, and so I just, I had a sense of kind of control of the situation.
<control+>	Link choice promoted feelings of control.

[R S304] The mood that I felt while I was activating different links was just a feeling of control because I felt like I was kind of in control, or I was participating in the story.

<links-attention+> Links promote attention to the text.

[R S316] Also, by having the ability to choose different links, I think it kind of got you involved in the story a little more in the sense that you may have paid attention to—more to what you were reading . . .

Subset B *Links, negative statements about*

<links-> Did not enjoy the process of choosing between links.

[R S310] It's kind of monotonous to always be pushing the button to get further and further into the story.

<control-> Link choice did not promote feelings of control.

[R S326] And the, the feeling I got from choosing a different link—I just felt pressure probably just 'cause the computer is here, and it was waiting for me to make a choice versus just reading by a text, which is kind of like in your own control. If you wanted to flip a page when you were ready you could do so.

<links-attention-> Links promote attention to themselves and thereby detract from text.

[R S303] It seemed a bit harder because, I mean, the text itself was easy, it was just, I was caught off guard by the blue highlighted links while I was reading. Paying more attention to those I think in the beginning than to actually what I was reading, I'd have to say.

Subset C *Link choice*

<linkchoice-plot> Link choice was plot-based.

[R S305] And choosing between the links, I tried to choose the word that would give me more information about what was going on.

<linkchoice-character> Link choice was character-based.

[R S312] I chose the ones that were basically almost like nouns. So when they clicked on her name, I wanted to know more about her.

<linkchoice-fore>	Link choice was influenced by foregrounding.
	[R S310] Something that might have prompted my interest in—to choose a specific way was, like I said before, the different vocabulary that was used, if it was really a lot of words that kind of brought more interest to the story, made it more visual and helped to bring more sense to the story.
<linkchoice-self>	Link choice was influenced by personal situation.
	[R S326] The choices I made, some of the choices I made were 'cause of the words. They just stuck out. Either they reflected me, just something about my mood lately, or just, you know, a word that associated with me.
<linkchoice-place>	Link choice was influenced by physical placement of link word(s).
	[R S330] Why I chose the links I did? Sometimes because it was the, the last link on the page, and I just wanted to see if it would continue with the same line, line of thought if I, if I clicked on that link.
<linkchoice-random>	Link choice was random.
	[R S314] My choices were mostly random . . .
<linkchoice-other>	Other reasons for link choice.
	[R S303] "I choice the name of the girl because that's the name of a T.V. character."
Subset D	*Links, other*
<links>	Neutral commentary on links.
	[R S328] There were some words I wish had hypertext on them so I could explore them further.
<CYOA>	Allusion to "Choose Your Own Adventure" series.
	[R S301] The experience was much like those 'choose your own adventure' books that you, that you used to, that I used to read as a kid.

Category 9	**Computer reading**
Subset A	*Computer reading, positive statements about*
<compread+>	Enjoys reading on computer. [R L324] I was reading this text on the computer. I, it was actually better than I thought it was. The screen didn't make, like, my eyes hurt, or anything, and I found it easier to read than reading, like, tiny prints in, or text in a book. So I enjoyed it more.
<compread-involve+>	Computer reading promotes reader involvement in the story. [RS316] Because there were the links, it did get me a little bit more involved in the story. And it did, it did sort of give me the feeling that I did have a little bit of power over what I was reading, because I thought I, you know, possibly could be choosing the path.
<comp-phys-props+>	The physical properties of the computer (i.e. screen) facilitate reading. [R L323] Now, focusing the experience of reading this text on computer, I actually, I have to say this, this way it's a lot less, I don't know if confusing is the word, but you, you can read it easier—the, the text itself—because of the colours, and so on. It's, it's very clear.
<text-formalprops+>	Approves of the physical layout of the text (i.e., node length). [R L311] Having this story on the computer, and having to click through it, and everything, that—it's a lot easier to read just for the simple fact that you really focused on the text shown, instead of having all these pages and lines in kind of the background vision.
Subset B	*computer reading, negative statements about*
<compread->	Dislikes reading on computer. [R L307] I honestly don't like reading text, or stories, or literature, on the computer.

<compread-involve->	Computer reading inhibits reader involvement in the story. [R L318] I would definitely say I enjoy, I guess, reading traditionally from a text or a book. Also, I find when I read I get absorbed into the actual environment, story, of situation of the, the book and the text that I'm reading—more so than when I was reading on the text here.
<comp-phys-props->	Distracted by the physical properties of the computer (i.e. screen, fan). [R S326] In reviewing this experience I just had, I didn't really like it too much—probably 'cause I was distracted by the noise from the computer.
<text-formalprops->	Disapproves of the physical layout of the text. [R L302] I found that a little chunky switching from screen to screen 'cause I guess when you're reading regular written printed text you're looking at a page and you see the outline of all the paragraphs in front of you, as opposed to having to switch through screen to screen.
Subset C	*Computer reading, neutral statements about*
<compread>	Neutral statement about reading on computer. [R S313] When reading the text on the computer . . . it's not any different, I think, than reading a text in a book.
<comp-phys-props>	Neutral commentary on the physical properties of the computer. [RL330] The physical sense I had—it was just a bit different 'cause usually when you read a book, I, well, I read it with the book facing flat down, and reading on a computer screen, it's like, kind of, vertical, but I, it didn't really make a difference to me.
<comp-person>	Personification of the computer. [R S326] And the, the feeling I got from choosing a different link, I just felt pressure probably just 'cause the computer is here, and it was waiting for me to make a choice versus just reading by a text which is kind of like in your own control.

<reading-tech>	Compares technologies for reading (i.e., print/electronic).
	[R L325] And I know, one of the biggest things is, I guess, I was wondering how long it was going to be. I mean, if you have a book in front of you, you can see exactly what you're going to be reading. And if you're reading it on computer it's just kind of, you know, you're clicking the link and you don't know when it's going to end.
<text-formalprops>	Neutral commentary on the formal properties of the text.
	[R L300] There were times why I wondered why some screens were shorter—the text length was shorter on some screens than on others.
<graphics/audio>	Remarks on absence of graphics and/or audio.
	[R S316] It would have been neat because it's on computer, you know, in a way I kind of expected almost I, if I chose a certain link that, you know, potentially there could be some sort of sound effect, or something like that.
Category 10	**Experimental design**
<linkflow>	Discusses semantic connections between link and node.
	[R S316] It seemed there wasn't really a lot of connection between the link and what I actually ended up reading.
<back>	Inability to reverse is troublesome.
	[R L303] Reading on this computer is quite different from reading in the books because, well, you couldn't flip back to re-read a part earlier, and so it was slightly harder to follow because you lost all the wonderful sensory information that was in this piece, and so it was harder to respond to it.
<path>	Questions whether the links lead to different stories.
	[R S328] I kind of expected kind of a story where you choose your own path, you choose your own ending, and that kind of stuff, and I'm not sure if that was exactly what this was. I guess this was, you choose a word and, and you get to pursue that area of the story more, more clearly.

<experiment> General statements about the condition of the experiment.

[R S303] I think anything else about this reading experience is that I don't think I have reflected as quickly on a reading text, I mean, other than that I was kind of forced to with this experiment.

Category 11 **Other**

Subset A: *Complexity codes*

The examples shown below consist of one or two representative sentences; the complexity codes were in fact applied to the whole of each protocol, as a measure of the sophistication of the commentary.

<complexity1> Discussion is superficial and brief. Ideas are not elaborated. Statements are most often general with very little specific reference is made to the text. This response does little to illuminate the reader's personal experience with the narrative.

It wasn't that great, personally, I don't think. You know, I could have written a better story myself. I suppose, you know, for someone in grade 7 it would be interesting—whatever level it's rated at, probably not very high. Kids would enjoy reading something like that, I'm sure. (S306)

<complexity2> Ideas are elaborated with *some* specific references to the text and to memories and feelings prompted by the reading experience. See <complexity3> for an example of comments appearing in this category (in other words, the difference between these two categories is a matter of degree).

and

<complexity3> Ideas are elaborated *extensively* with *multiple* specific references to the text and to memories and feelings prompted by the reading experience.

When she was laying in bed at about 10:00 o'clock at night, and she said it was "still bright, and still hot" . . . that seems odd except that I can remember som verry, very warm July nights. It was probably starting to get darker by 10:00, but with the amount of heat in the air, it was stifling, you just could hardly breathe, and as soon as I read her passage on that, I was back in [the dorm] remembering how I felt, and kind of the frustration, and so on, of not being able to get comfortable.

Subset B:	*Miscellaneous*
<comptech>	General statements about technology.
	[R S326] I think this computer, and this choosing of the links is just, I mean, I think it just reflects the way that society and technology is going today, that we, we can make more choices about what we do, and that we are making more choices.
<author>	Discussion of the author or the role of the author.
	[R S313] It kind of got you to, got the person more involved than just reading, and flipping the pages, and going by where the author goes.
<R ****>	Reference code.

Appendix F: Frequency counts for all categories of reader response

	Linear		**Simulation**	
Protocols	30		29	
Complexity 1	6		3	
Complexity 2	17		15	
Complexity 3	7		11	
TAG	**Total occurrences**	**Number of protocols**	**Total occurrences**	**Number of protocols**
Category 1				
Interp-lang	1	1	2	2
Interp-theme	6	5	9	5
Interp-symbol	8	6	5	3
Interp-general	19	14	19	16
Question	2	2	1	1
Allusion	2	1	1	1
Characteremotion	14	12	17	13
Category 2				
Forgrounding	4	3	11	6
Defamiliar	3	3	12	5
Diction	2	1	5	5
Dialect	2	2	2	2
Category 3				
Imagery	22	16	14	7
Visual	10	8	6	4
Category 4				
Subset A				
Identification+	23	13	13	9
Autobio-specific	2	2	2	2
Autobio-general	16	11	28	20
Involvement+	5	3	6	4
Readeremotion	19	14	12	10
Subset B				
Identification-	5	3	1	1
Involvement-	6	5	4	4

	Linear		Simulation	
TAG	Total occurrences	Number of protocols	Total occurrences	Number of protocols
Category 5				
Reader-static	3	3	1	1
Reader-dynamic	3	2	5	3
Dream	2	2	1	1
Category 6				
Subset A				
Confuse	2	2	6	4
Confuse+	2	2	5	5
Loss	0	0	13	9
Storyflow-	2	2	15	9
Subset B				
Storyflow+	0	0	1	1
Subset C				
Story+	7	6	1	1
Closure+	1	1	0	0
Subset D				
Story-	5	3	6	5
Closure-	0	0	1	1
Subset E				
StoryQ	0	0	16	8
Suspense	9	8	11	11
Plotsummary	4	4	1	1
Category 7				
Subset A				
Compread+	11	9	2	2
Compread-involve+	4	3	6	5
Comp-phys-props+	4	3	0	0
Text-formalprops+	11	9	1	1
Subset B				
Compread-	12	11	21	19
Compread-involve-	12	9	9	8
Comp-phys-props-	7	7	13	13
Text-formalprops-	5	5	1	1
Subset C				
Compread	1	1	6	5
Comp-phys-props	1	1	0	0
Comp-person	0	0	2	2
Reading-tech	14	10	10	8
Text-formalprops	3	3	0	0
Graphics/audio	1	1	2	2

	Linear		Simulation	
TAG	**Total occurrences**	**Number of protocols**	**Total occurrences**	**Number of protocols**
Category 8				
Subset A				
Links+	5	5	6	5
Control+	8	4	13	10
Link-attention+	11	5	2	2
Subset B				
Links-	7	7	15	13
Control-	0	0	2	2
Link-attention-	9	8	8	5
Subset C				
Linkchoice-plot	n/a		17	16
Linkchoice-char			6	6
Linkchoice-fore			10	8
Linkchoice-self			5	5
Linkchoice-rando			3	3
Linkchoice-place			2	2
Linkchoice-other			2	2
Subset D				
Links	3	3	6	6
CYOA			5	5
Category 9				
Readerpace+	4	3	4	4
Readerpace	3	3	0	0
Category 10				
Linkflow			6	4
Back	6	5	7	5
Path			11	10
Experiment	1	1	2	2
Category 11				
Subset A (complexity codes—see above)				
Subset B				
Computer-tech	0	0	1	1
Author	2	2	4	4
Dataloss	2	2	1	1